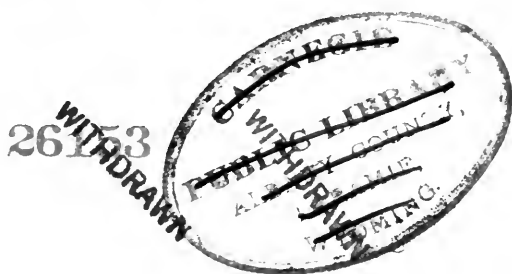


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The American City Magazine

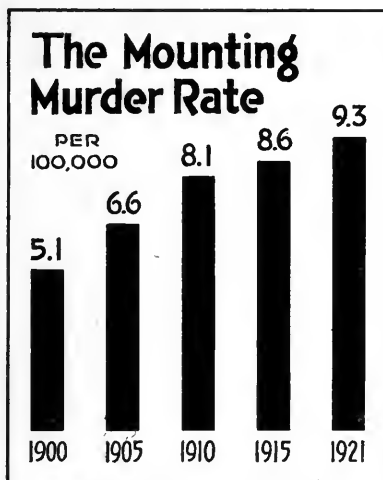
New York

January

1923

Our Appalling Murder Record

IN twenty-eight American cities with a total population of 20,558,770, there were 1,910 cases of murder during the year 1921. These figures and the accompanying table of deaths officially recorded by local registrars as having been due to homicide, are from the annual compilation made by Dr. Frederick L. Hoffman, consulting statistician of the Prudential Insurance Company of America, and published last month in *The Spectator*.



AVERAGE FOR 28 CITIES

HOMICIDE RATE PER 100,000 POPULATION IN 28 CITIES

| Cities | 1911-1915 | 1916-1920 | 1921 |
|----------------------------|-----------|-----------|-------|
| Baltimore, Md. | 5.8 | 7.9 | 11.3+ |
| Boston, Mass. | 4.6 | 4.6 | 3.7 |
| Buffalo, N. Y. | 5.1 | 5.4 | 4.8 |
| Chicago, Ill. | 9.0 | 10.7 | 11.8+ |
| Cincinnati, Ohio | 12.2 | 11.6 | 15.2+ |
| Cleveland, Ohio | 6.6 | 12.7 | 10.3 |
| Dayton, Ohio | 6.7 | 7.8 | 10.1+ |
| Hartford, Conn. | 3.9 | 4.2 | 1.4 |
| Indianapolis, Ind. | 9.8 | 9.1 | 12.9+ |
| Los Angeles, Calif. | 10.9 | 10.0 | 13.6+ |
| Louisville, Ky. | 16.9 | 14.7 | 16.5+ |
| Memphis, Tenn. | 69.7 | 60.9 | 56.8 |
| Milwaukee, Wis. | 3.7 | 3.6 | 3.6 |
| Minneapolis, Minn. | 5.3 | 5.3 | 7.1+ |
| Nashville, Tenn. | 35.9 | 21.0 | 35.1+ |
| Newark, N. J. | 4.0 | 4.9 | 4.7 |
| New Orleans, La. | 24.0 | 21.2 | 20.0 |
| New York, N. Y. | 5.9 | 5.0 | 6.2+ |
| Philadelphia, Pa. | 4.4 | 6.6 | 5.1 |
| Pittsburgh, Pa. | 6.2 | 9.2 | 9.4+ |
| Providence, R. I. | 5.1 | 4.4 | 5.0+ |
| Reading, Pa. | 2.4 | 1.9 | 4.6+ |
| Rochester, N. Y. | 3.5 | 2.7 | 4.2+ |
| San Francisco, Calif. | 13.0 | 11.4 | 9.8 |
| Seattle, Wash. | 9.6 | 7.7 | 7.0 |
| Spokane, Wash. | 9.9 | 4.6 | 8.6+ |
| St. Louis, Mo. | 14.3 | 16.8 | 17.2+ |
| Washington, D. C. | 7.8 | 12.0 | 12.6+ |
| Total 28 cities..... | 8.1 | 8.5 | 9.3 |

A philosopher might argue that constantly increasing sanctity of human life must necessarily accompany the progress of civilization; but when the appalling facts belie the theory, it becomes a supreme duty of civic leaders to study the causes and apply every possible remedy.

In commenting on our criminal homicide record, the *New York Evening Post* says:

"It is evident that our social environment, with its violence of temper and disrespect for law, is the chief cause of our high murder rate. Take away the crimes due to drink and those due to the presence of unassimilated foreign-born, and the total would still be shocking compared with that of the best European countries. England and Wales average eighty to ninety murders a year for a population of about forty millions; Memphis averages sixty to seventy for every one hundred thousand inhabitants. Chicago characteristically has more murders than all England, and a little city like Indianapolis leads London. One reason is the readiness with which punishment is evaded in America.

"We make it easy for the most dangerous men to get deadly weapons, and difficult for the hangman to lay his hands on even those most clearly guilty of murder. Dr. Hoffman rebukes the newspapers for the space they give to murders. But the effective remedies lie in a stronger social insistence upon discipline and order, a strengthening of the police, and a reform of the criminal court procedure."

THE AMERICAN CITY will welcome comments from its readers on this important subject.

Getting the Jump on Unemployment

By Otto T. Mallery

Member President's Conference on Unemployment

A DOG'S life and the nation's history are equally full of ups and downs. "Business cycles" is the new high-sounding term for ups and downs, or boom and bust, expansion and deflation, labor shortage and the terrors of joblessness.

So few business cycles have occurred in one man's life that he is not as conscious of them as he is of the more frequent swings of other tides. When the industrial tide goes out and leaves millions of workers high and dry, we are as surprised as though this were a new and unprecedented phenomenon. When the tide is out is no time to float the stranded ship. So politicians and business men gather sadly on the shore and long for the tide to come in. But the workers can't wait. Thousands are so frightened and demoralized by worry and suffering that they are never the same again. When strong men find no work for willing hands at any wage, they are likely to feel that there is something wrong with the constitution and everything else. Security is one of the springs of patriotism and of citizenship.

Are the American people helpless to diminish periods of unemployment? The President's Conference on Unemployment says, "No." Are we on the job? We are getting ready to begin.

There are two kinds of business—public and private. The object of private business is profit; the object of public business is service. Regularization of employment is profitable for private business within certain limits. Regularization, that is the prevention of the most acute and nation-wide plagues of unemployment, would be a public service than which no other public business is more important. Experts tell us that if public works were expanded and contracted at certain times in reverse direction to the contraction and expansion of private business, this great public service would be performed.

Outlays for public works—federal, state, and municipal—are at the rate of \$900,000,000 per year. If one-third of this annual expenditure could be advanced or post-

poned to coincide with cyclical periods of unemployment coming every five to ten years, it would create a reserve fund of over one and one-half billions, or a payroll reserve of one and one-eighth billions. No one can estimate what exact proportion of the usual wage loss of a great depression this would make up. It takes no mathematician to figure, however, that the prompt letting of one and one-half billion dollars' worth of contracts would fill an immense vacuum.

The day laborer on the job is not the only one who would benefit. Makers of materials, carriers, office workers, would find work where none was before. More important than these, even, are the additional groups who would be employed to supply the commodities demanded by the purchasing power of the wages earned directly and indirectly because of public works under way. Account must also be taken of the frozen credits liquefied and the accumulated stores of raw materials moved.

Public works orders would splash like a great rock into the stagnant pond of industry and radiate ripples to the farthest shore. The people along the shore who notice the motion might never know that a national public works program was the cause.

The President's Conference on Unemployment has caused studies to be made and embodied in a book, "Unemployment and Business Cycles," to be published in January by the McGraw-Hill Company, New York. The suggestions in this book need to be widely understood and embodied in federal, state, and municipal legislation and practise. Federal aid to the states for road building must be greater in bad times than in good times. River and harbor development must be pushed at its maximum during depressions. Increased irrigation and reclamation in the West and South would result in orders for steel, copper, lumber and tools, far from the lands directly benefited. Public buildings, post offices, etc., instead of being built when private building is making great demands for the same men and materials, as is threatened by the pres-

ent Congress, should be planned long in advance and executed at times when such a great national program involving hundreds of millions of dollars would benefit rather than disturb general business and labor conditions. Cities may well make city plans with a far look into the future and arrange to do in bad times what has been left undone in preceding years. These things require forethought, advance engineering plans, reserve funds, contingent bond issues,

and hard work by many citizens. Most of all, they require an organized public determination expressed in the conscious policy of every community. Americans have done far more difficult jobs than this one. The challenge lies before us.

AUTHOR'S NOTE.—The Federated American Engineering Societies, 719 Fifteenth Street N. W., Washington, D. C., and the American Association for Labor Legislation, 131 East 23rd Street, New York, are ready to keep in touch with those who want to know more of these plans or to follow the legislative and educational undertakings of the future.

How State Licensing Menaces Safety in City Streets

By **Richard E. Enright**

Police Commissioner, New York City

THERE are some facts regarding street accidents to which I desire to call attention. The licensing of automobiles in New York State is governed entirely by the law, and as a police function the city government has absolutely nothing to do with the licensing of automobiles. That duty devolved for many years upon the Secretary of State, but last year it was transferred to the State Tax Department. They collect millions in revenues each year. The amount for 1922 will total about \$11,000,000. Not one cent of that money is spent for street safety.

The whole theory of a license is that the fee collected should be used to regulate the business so licensed. But in New York State the automobile license fees are used entirely for the operation of government or the reduction of taxation. If a license fee is collected primarily for the purpose of regulating the business, then of the eleven millions of dollars collected in this state, a large part ought to be used for the regulation of the automobile business, but instead it is used for good roads and other purposes.

Almost anybody can get a license to run an automobile; he may be halt or lame or blind. As an illustration, a beggar going around on one of those little wheeled platforms was arrested the other day and it was found out that just around the corner he had a sedan automobile; he lived in this automobile; he operated this machine himself. Of course, he could only use one hand

to operate the brakes and the other one for the steering. Think of it—here was a legless man given a license to operate a high-power car in the congested streets of this city! As another instance, my attention was directed to a man who is about 90 per cent blind who has a license to operate an automobile and who has been responsible for upwards of a dozen accidents on the streets of the city.

There are no adequate safety regulations regarding the issuance of these licenses. A crook can get a license to operate an automobile without the slightest trouble. We know that is so, because the city has something to do with the licensing of taxicabs. First of all they must get their license from the state and get their license plates, and then they must apply to the License Bureau of the city for a license to run a taxicab.

In 1918 we found that taxicab chauffeurs were working in collusion with criminals in this city. A good many serious crimes—burglary, safe-blowing and like crimes—were done in collusion with taxicab drivers. I asked the Commissioner of Licenses if he would not let me investigate all applicants for such licenses. The result was that during 1918, out of a total of about 1,200 new applicants, we found out that about 300 had criminal records, and ordinarily they would have been granted licenses. We then went back and asked the License Commissioner if he would not allow us to investigate all applicants for renewals. When a man once

had a license he was supposed to have the right to a renewal. We found that about eight or nine hundred more criminals in New York City were running taxicabs, and we had them disqualified. Taking that as a basis and applying that to the number of persons who are running cars in the state, there are in all probability 25,000 people in New York State with criminal records who are operating automobiles, who are still criminals, and who are operating these automobiles in the commission of crimes.

The state authorities have no system for inspecting the automobile in use, and they do not seem to care whether or not the cars are mechanically fit to be operated on the highways. We arrested a man the other night who did not have a brake on his car; he was driving an old ramshackle machine. He said that he had not had any brakes for two months, and that is a sample of the too general condition. It seems that any kind of car can be licensed to operate on the streets of New York. Somebody ought to examine these cars and investigate the characters of all licensees, so that only mechanically safe cars and properly qualified people may be licensed to operate.

Before a man can become a locomotive engineer he must serve for several years as a fireman, and then after he has learned all the mechanism of the engine he is thoroughly examined; his eyesight has to be perfect; he must know and be able to distinguish colors, and his general physical con-

dition is thoroughly investigated. The locomotive is a machine running on iron rails on a private right of way, that cannot get off the track, and the engineer can scarcely do any damage if he will but watch his signals. And yet they take all these pains to qualify a man to operate a locomotive on a steam railroad; but anybody can obtain a license to operate a dangerous high-power automobile on our crowded streets. This condition is responsible for many of the accidents we have. Reckless drivers, drug fiends, criminals, incompetent drivers and defective and unsafe machines should not be licensed or operated on the crowded streets of this city.

Then there is another great menace: there is no limitation whatever as to the size of a car that may be run on our streets. There are great moving vans operated that it is impossible to stop in half a block, and huge sightseeing cars which are growing heavier and wider all the time and taking up more room on our congested streets. Besides the danger of these machines and the space they are taking up, they are also breaking down our pavements. They do these things much better in England. Scotland Yard examines all the taxicabs, hacks, busses and other vehicles operated for hire in London. They examine them as to their size, weight and mechanical fitness and they investigate the character and qualifications of the persons who drive them. We do absolutely nothing about that here.

Teaching Safety and Responsibility in Public Schools

THE Detroit public schools were among the first to introduce safe living as a part of the regular course of study and to wage a continuous campaign of education against carelessness. The course was aimed to develop in the pupils a sense of carefulness, safety habits, and a feeling of responsibility for the safety of others. For a year experiments were made in safety education, and the best results of these attempts were then incorporated in a course of study in safety.

The results were gratifying. In spite of the many other factors, beyond the control of the schools, which enter to prevent safety from becoming the complete success it was hoped it would be, in a year, 1919, accidents to school children decreased 20 per cent. This was a remarkable decrease, for in the

same year the school population in Detroit increased 9.7 per cent over 1918, and the number of automobile registrations in Wayne County increased 81 per cent. The tendency of traffic accidents is to increase directly in proportion to the increase in automobile registration.

While the total number of fatal accidents in Detroit in 1920 increased 32.5 per cent, there were only 57 fatal accidents to school children in that year as compared with 64 in 1918. The increase in population and the number of automobiles in the city would have led one to expect a much larger number of fatalities. In 1921, the results of safety education were even more markedly successful, as accidents to children decreased 40.6 per cent.

—Detroit Educational Bulletin.

Street Paving Costs in Dayton, Ohio

Unit Costs Reduced and Methods of Construction Improved

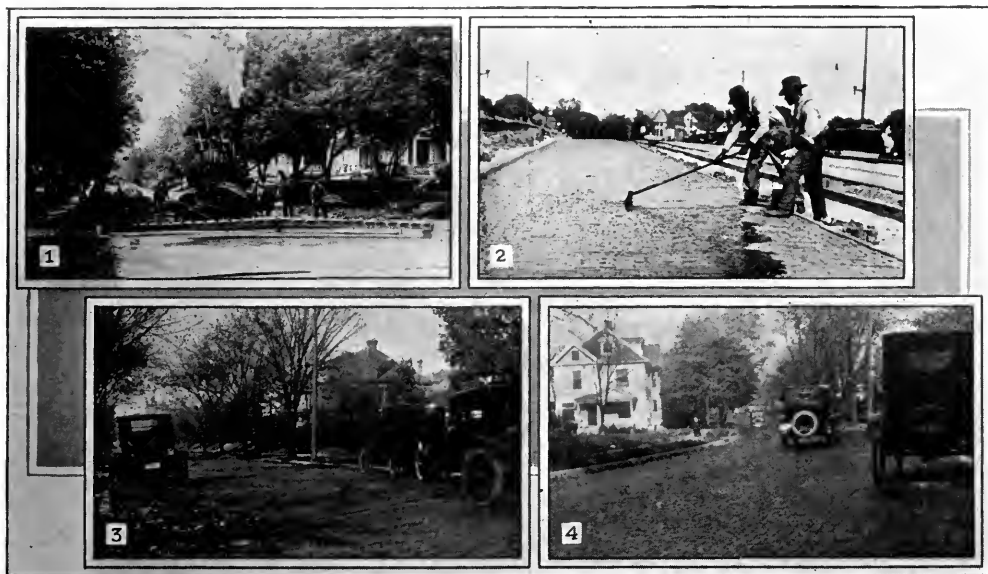
By Ivan E. Houk

City Engineer, Dayton, Ohio

STREET pavements were laid in Dayton in 1922 for considerably less money than at any other time since the beginning of the war. Asphalt paving laid a year ago cost \$3.99 per square yard. This year similar pavement is being laid for \$3.14 per square yard. Brick pavements on one of the streets that are being paved by

ment were received last year. It is believed, however, that had such bids been taken, they would have been at least 30 per cent higher than 1922 estimates. The low bid for wood block received in July of this year was \$4.68.

Durax granite block is now being laid between the car tracks for \$4.78 per square



TYPES OF STREET PAVEMENT COMMON IN DAYTON

1. Laying reinforced concrete pavement on Kenwood Avenue in the summer of 1922. 2. Applying asphalt filler on brick pavement on Third Street bridge during summer of 1922. 3. Sheet asphalt pavement laid on Cambridge Avenue in 1922. 4. A typical view of wood block pavement on Grafton Avenue, laid in summer of 1917

contract is \$3.37 per square yard. Last spring brick was laid at a cost of \$5.12 per square yard, showing that there has been some reduction recently.

Reinforced concrete streets are being laid this year at slightly lower prices than in 1921. In June, 1921, the cost ran about \$3.19; in September of the same year it had dropped to \$2.40, and similar work this year has varied from \$2.27 to \$2.40 per square yard. No bids for wood block pave-

ment were received last year. The block alone is slightly higher this year than last, the present cost being about \$2 per square yard, as against \$1.80 for last year.

Concrete alley pavements are being laid at prices varying from \$2.09 to \$2.50 per square yard. Last year the price varied from \$2.24 to \$3.73 per square yard.

Concrete streets and alleys are reinforced with a wire mesh reinforcing having a weight of not less than 28 pounds per 100

square feet. Alleys are made with a uniform thickness of 6 inches, subgrades being shaped to correspond with the surface of the pavement, that is, with the center 4 inches lower than the edges, so that the water will drain down the center. The above prices for street and alley paving include grading, but do not include curb or combined cement curb and gutter. However, in no instance in the street paving work did the grading amount to much more than removing enough material to make room for the pavement. Some of the prices for alley pavement are high, on account of the unusual amount of grading.

Brick, wood block, Durax and asphalt pavements are laid on a 6-inch concrete base, covered with a suitable cushion. Wood block is always laid on a $\frac{1}{4}$ mortar cushion, $\frac{1}{2}$ -inch thick. The other types of permanent pavements are laid on a 1-inch cushion

of either sand or mortar. A soft filler is used in all cases, sometimes a straight asphalt, sometimes a mastic made by mixing hot asphalt or pitch with equal proportions of heated sand. A 1:3:6 mixture is used in the concrete foundations, and a 1:2:3 mixture in the concrete street and alleys. Separated and washed materials are used in all cases. Standard wire-cut paving block $8\frac{1}{2}$ inches long, 3 inches wide and 4 inches deep are used on the brick streets, hillside pavers being used wherever the grades are unusually steep. Wood block must average 8 inches in length, although they may vary from 6 to 10 inches in length. They must be $3\frac{1}{2}$ inches deep and from 3 to 4 inches wide. Two kinds of oil are specified for the wood block: oil "A," a distillate obtained wholly from coal tar; and oil "B," a more volatile oil produced from coal gas or coke over tar.

The Enforcement of Building Code Provisions

Needs, Difficulties, Police Powers, Licensing and Penal Sections Discussed

AT the Eighth Annual Meeting of the Building Officials Conference, J. R. Hesser, of Toledo, Ohio, discussed the enforcement of building code provisions by cities. He pointed out that the lack or the inadequacy of penalties is the cause of the ineffectiveness of many of our building code provisions and ordinances. An ordinance and all the sections of the ordinance, unless thoroughly surrounded with enforcement provisions, have but little, if any, force.

Ordinances and codes can be used as a standard upon which to base rulings, but if there is an attempt to enforce them against the will of someone who takes issue with the building department, the outcome is not always what might be desired. Large undertakings and extensive improvements are not so difficult to take care of, for these are of enough importance to attract men with engineering ability and are cared for within the department by men trained along technical lines. The tendency in ordinary construction is to get through as

cheaply as possible, and the work is carried on by small contractors or inexperienced persons, so that when the work is done, the design is poor and many things have been overlooked. One of the things most commonly neglected is fire protection, because the owner does not know what to do and the contractor does not give it his attention because of the extra labor it would cost him, and many of these hazards are covered when the inspector is not on the job.

Most ordinances prescribe how and what is to be done and prescribe the limit and, in a way, provide penalties for violations. The more general ordinances that are usually incorporated in a building code are used a great deal more than the purely technical part of the code and are many times of greater moment. They have to do with the hazards that are ever present in every community and the strict enforcement of which is a general benefit but may seem to be an undue restriction on certain individuals. These are the ordinances that

are hard to enforce, and it requires a strong, hard-headed building official with the undivided support of the administration to which he is responsible for his position.

The general ordinances are drawn with the idea of reducing fire hazards, improving sanitary conditions, making better living conditions, and providing protection against encroachments, and for the welfare of the public in general. The law of public welfare being the greatest law in the land, the observance of these laws is of supreme importance, yet, as a rule, they are the most difficult to enforce. When it is found necessary to bring action in case of violations, the building inspector applies for an affidavit and then his troubles begin. It is then that he finds it difficult to draw an affidavit that will hold in court, and he finds no ordinance that would support action in that particular instance.

The police powers given a building official are broad and arbitrary, and when they are tried out before a court of competent jurisdiction, there is usually a different view taken in the matter because personal rights or personal liberties are being encroached upon. Were inspectors infallible and delegated with absolute power, the question would be solved, but all have a vulnerable spot.

The matter of licensing crafts and professions is one open to attack and not altogether satisfactory, and many times it is not the success which it should be. In some building codes, the system of licensing is provided for. To license is to grant a right of privilege or unrestrained liberty of action. A license tends to eliminate more than to restrict, and for that reason, if for no other, might be objectionable.

The penal sections of nearly every building code are stereotyped phrases and are used almost universally. This, of course, is no fault of the technical minds that prepare the codes, but is due to lack of legal attention in their preparation. A department can function only with those things given it to function with, and if the staff or equipment is inadequate, a strict enforcement is impossible. It is not always easy to convince legislative bodies in our cities of the necessity of unqualified support of inspection departments, and a lack of support makes for lack of efficiency and subjects the building officials to undue criticism.

Rudolph P. Miller, of New York City, spoke of a great deal of trouble he experienced some years ago in enforcing building law, and stated that if our departments can be organized so that responsibility for administration rests as much as possible on a single individual, good results are likely to follow. Years ago the practise in Manhattan was for inspectors to report violations, to send out formal notices, and allow a certain time before reinspections were made; after which, if nothing was done to comply, the case was referred to the Corporation Counsel for prosecution. The Corporation Counsel had many other things to look after, and because he did not have a direct interest, the cases accumulated in his office and nothing was accomplished.

"We happened to have in our office," said Mr. Miller, "a clerk who had passed his bar examinations, and we made him law clerk. We recalled all the cases that had accumulated in the Corporation Counsel's office, reinspections were made, and those that were too old were dismissed, as well as those where the evidence had been practically lost or destroyed. Those which were trivial were also dismissed. Others, which seemed to be important, we made out as new cases and started over again. The clerk in the building inspection office practically prepared the cases and took them over to the Corporation Counsel's office and followed them up to see that they were prosecuted in the order in which they were filed, with the result that, under the new plan, the violation cases sent to the Corporation Counsel were reduced to 4 per cent and action was secured on most of them. Under the previous system, 40 per cent of the violations were sent to the Corporation Counsel's office and very few convictions were secured."

Frank Burton, Commissioner, Department of Buildings and Safety Engineering, Detroit, Mich., stated that they had worked out a system in Detroit quite similar to the one in New York. The police are notified of the stop-work order and the policeman on the beat arrests any workman who violates the order. This has proved very effective and, up to the present time, has not been contested in any court. The municipal judges have encouraged them to do it and in hearing cases have often asked, "Why didn't you stop the work at that time?" Mr. Burton has given orders to

stop all doubtful work and let them argue about it afterwards. They can go into court on mandamus or injunctions or in any other way to overcome the new order, if they think the building department is acting illegally. There has recently been a new Municipal Court established in Detroit, and in this court the Judge handles practically all the building cases for a considerable period at a time, six months or a year, and, consequently, that judge becomes familiar with the object and aims of the department, and the department learns to interpret its ordinances from the rulings he makes.

In Springfield, Mass., a city of 140,000, with approximately \$7,000,000 worth of building a year, Fred W. Lumis, Building Commissioner, reports, they have comparatively little trouble with builders who try to violate the regulations or build insecure work.

Walter R. Forbush, the Commissioner of Public Buildings, West Newton, Mass., reported that in 11 years' experience as Commissioner he had had one case in court. There had been many violations, but the Commissioner was successful, with one exception, in getting them settled outside the court. Some of the methods have been somewhat drastic at times. The particular case taken to court was where a man persisted in going ahead with his work without a permit. Mr. Forbush claimed that putting up forms constituted starting a building. The judge took the case under advisement and, after a week's deliberation, decided that the digging of dirt upon a lot, with the evident intention of erecting a building thereon, constituted the starting of the work of construction. The defendants were fined \$10 and appealed, and will probably go to the Supreme Court of the state.

Extra Precautions in Concrete Street Construction

By R. D. Ballew

City Manager, Sturgis, Mich.

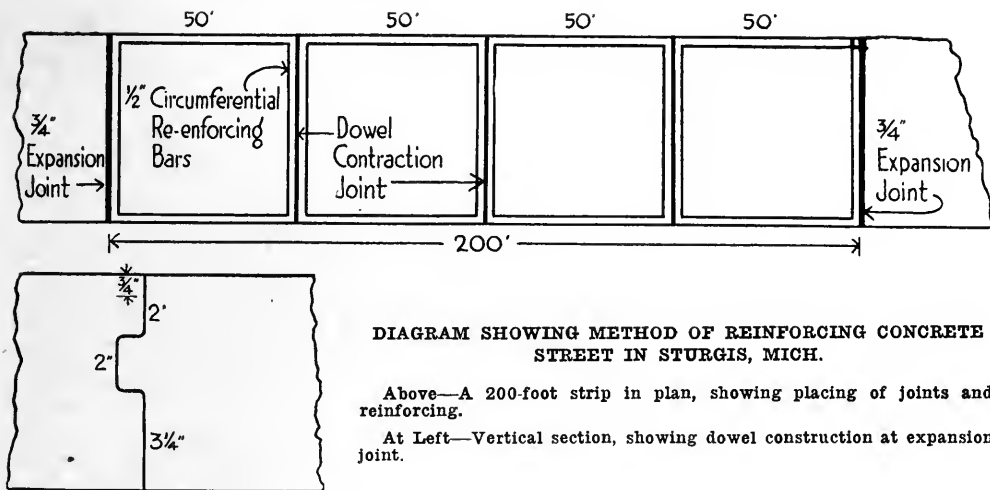
ONE of the first objections heard when cement concrete paving is discussed is the question of cracks. This is particularly true in a city, for, no matter where the crack occurs, it will have a much larger appearance in the eye of the abutting property owner than the same crack would have on a highway where the abutting frontage is much greater. In addition to this, the lower speed of vehicles in a city and the heavy pedestrian traffic focus much more attention on the crack in a city street than would be given the same crack on a highway.

Therefore, assuming that cracks are not detrimental to traffic so long as the contour of the pavement remains uniform, it is still very desirable to limit them to a minimum and, in all events to control them, in a city. With this in view, the following procedure has been standard practise in Sturgis, Mich.

Believing that longitudinal cracks in

streets were caused partly by unequal compactness of the subgrade, it was thoroughly scarified to a depth of 12 inches, sprinkled and rolled to grade. As the soil was largely gravel, no provision for draining the subgrade was made.

In the concrete pavement, which was 1:2:3 mix, using washed aggregate, two forms of reinforcement were used—a circumferential rod entirely around each 50-foot section of pavement, and the usual wire mesh reinforcing. For the circumferential reinforcing, a ½-inch bar was used, although a ¾-inch bar would have been better. This was placed entirely around each 50-foot section of pavement 3 inches from the top, 6 inches from each edge of the slab, and 6 inches from all joints. This was done because a large majority of the transverse cracks in a pavement start at the edge; thus, placing the bar reinforcing will have a tendency to prevent such cracks from starting. The



wire mesh reinforcing was intended to hold sections together in case cracks did occur and to help bridge over any soft places in the subgrade caused by the settlement of ditches.

In order to control contraction cracks in concrete pavement, it has been the custom to place expansion joints about every 40 or 50 feet. Regardless of how rigid the inspection is during construction, there is always a chance that the joint will not be perfectly smooth, and, what is worse, if the joint is not exactly vertical, one section may be forced up over the adjoining section. To obviate these difficulties, a doweled contraction joint of No. 18 gage steel placed 3/4-inch below the surface every 50 feet served the purpose of a contraction joint and allowed a smooth finish over the joint. The dowel, which is 1 inch wide

and 2 inches deep, will keep the contour of the pavement uniform even if the contraction joint is not exactly vertical. In every case a true crack appeared over these joints within two weeks after the concrete was placed. These cracks were then cleaned and filled with liquid asphalt. A 3/4-inch expansion joint was placed every 200 feet in place of the contraction joint. This gave ample room for expansion, as all the work was done in very warm weather.

All sections of pavement over 26 feet in width were built with a construction joint in the center. This permitted the use of a much more rigid strikeboard and resulted in a smoother pavement than would have been possible otherwise.

This pavement has now been down a year and not a crack has occurred except those over the contraction joints.

City Cleansing Services on Strictly Municipal Basis

Philadelphia Eliminates Contract System for Street Cleaning and Ash, Rubbish and Garbage Collection and Disposal

FOR many years Philadelphia remained the one large city in the country whose street cleansing services were in the hands of private contractors. Aside from the efficiency of the work, the political aspect of this manner of doing business was intolerable. The work was done by contractors who were also political bosses. The rule that contracts were never let for more than a year at a time successfully eliminated independent contractors, and it was only after years of agitation that the new charter was able to secure for the city the power to do its own street cleaning.

Beginning with January 1 of last year, all the city cleansing services—street cleaning and ash, rubbish and garbage collection and disposal—were put on a direct municipal basis in all districts. Since then there has been general satisfaction with the service rendered. The budget allowance for the past year was considerably less than that for previous contract work, although this was to be expected because of lower price levels. It is probable, however, that a saving over the budget allowance will be made.

—National Municipal Review.

The Eliminated Grade Crossing Is the Only Safe One

By A. R. Hirst

State Highway Engineer, Madison, Wis.

AFTER curves and narrow surfacing, the most prevalent cause of highway accidents is the railway grade crossing. Many accidents testify to the fact that all forms of so-called crossing protections fail, even flagmen and gates. In planning new main highways, every possible effort should be made to secure the elimination of grade crossings. Usually the highway can be relocated, so as to avoid crossing the railway at all. If two grade crossings with the same railway line lie within five miles of each other, it will usually be cheaper to buy a new right of way on one side of the track and grade and drain it, than to separate the grades at the two crossings. If, however, there is something which must be met on the opposite side of the track, such as a village or city which it is necessary to accommodate, this course may not be feasible, although some point can usually be found between the two crossings where a separation can be made to accommodate traffic to or from the village in question, while the main line of traffic is left free.

Each case must be considered upon its merits, but both under-grade and over-grade crossings have disadvantages in alignment. The best solution in four cases out of five, if the crossings are not too far apart, is to relocate alongside the track. If a highway must cross a railroad, an overhead is usually superior to an under-grade crossing, for several reasons, and usually is less expensive.

The accident records of 1922 show a lamentable increase in grade-crossing accidents and in lives lost. A careful reading of Mr. Hirst's short discussion of the grade-crossing problem will be helpful to city and county officials in crystallizing their ideas and acts.

Up to recent years about two out of three grade separations built by the railroads have in reality been more dangerous to highway traffic than the grade crossings they replaced, because the railroad paid no attention to the matter of highway alignment and in almost every case used crossings perpendicular to its tracks, with too sharp, and sometimes blind, approach curves. Such crossings are seldom, if ever, satisfactory where the highway in general parallels the railroad, as many main highways naturally do, and when skew crossings have to be built, the decision almost inevitably falls upon relocating the highway.

Highway intersections, especially intersections of roads built for high speed, are another source of grave danger. All intersections should be well signed on both highways and, in addition, good Y's should be put in each direction, because such Y's serve to increase the vision for the traffic which crosses perpendicularly, and the traffic which makes the turn fits into line much better if its course is changed as it comes into its new line of travel.

At many crossings of two supremely important highways, it is undoubtedly necessary to separate grades, as railroads have done. This may sound extreme, but where such cases exist on really important lines of traffic, there can be no doubt that the separation of the two crossings is not only desirable, but also an economic necessity.

The present tendency to reduce the depth of ditches and to depend more on tile underdrains for the drainage of roads not only increases the safety of traffic, but improves the appearance of the roads as well. The sodding of slopes, ditches and shoulders where the soil is too poor for successful seeding is advisable from the standpoint of lessened maintenance as well as improved appearance.

Charles F. Boehler, Landscape Engineer, Michigan State Highway Department.

The Promotion of Zoning in Chicago

By Charles B. Ball

Chief Sanitary Inspector, Department of Health, Chicago

SINCE the beginning of the zoning movement in Chicago, its friends have held the conviction that zoning, if it is to be successful in a great city, must receive intelligent support from a large part of the public. This is true with respect to all stages of its progress: in the preliminary stage, when the general purpose and achievements of zoning are explained; in the second stage, when the zoning authority begins its work to find the remedy which will bring order out of chaos; and in the final stage, when zoning depends upon the passage of the proposed ordinance by the city council. Public cooperation and support are even more necessary when the ordinance becomes effective and is applied to various critical situations, some of which may not have been anticipated in the previous stages.

The newspapers of Chicago have uniformly discussed zoning with fairness, and given marked approval to the zoning idea.

Besides publishing local news notes and original articles on the subject, some newspapers have reprinted considerable zoning material embodying the experience of other cities.

The most noteworthy feature of the publicity campaign during the three years past has been the support rendered to the movement by business, technical and civic organizations, such as the Chicago Real Estate Board, the Association of Commerce, the Western Society of Engineers, the Illinois Society of Architects, the City Club, and the Woman's City Club. All these have given considerable space to the promotion of zoning in their regular bulletins, and certain other associations have maintained zoning committees and held zoning meetings.

The two-day Zoning Conference held in Chicago the latter part of 1919, after a tour of several cities by a group of fifty persons representing the City Council, the



ONE OF MANY PHOTOGRAPHS ILLUSTRATING THE NEED OF ZONING, USED IN CHICAGO'S CAMPAIGN



ZONING WOULD HAVE PREVENTED THIS BLANKETING OF A SINGLE-FAMILY HOUSE BY APARTMENTS

Board of Education, the county officials and a number of civic organizations, impressed the public rather generally with the significance of zoning where it was in force. A subsequent two-day conference included addresses by most of those who had achieved public notice as zoning experts. An interesting session of this conference was held in the Council Chamber in the City Hall, presided over by Mayor Thompson and addressed by Edward M. Bassett of New York. The proceedings were printed by the Union League Club and afford a significant contribution to the literature on the subject.

The Zoning Commission, having been appointed in July, 1921, began its work by discussion of the limitations imposed by the Enabling Act, and promptly appointed Messrs. Bennett and Parsons its consultants. The organization of the field forces and the office staff, and periodic reports of the work being done, were sufficient to attract the attention of a public eager to understand something of the foundation that was being laid. In April, 1922,

the Commission published an excellent pamphlet of a dozen pages, setting forth the meaning of zoning and how it had been undertaken in Chicago. This pamphlet was illustrated with three-color pages giving an excellent idea of the base and use maps and other interesting studies. The publication also included twelve half-tone illustrations showing the nature of zoning and some of the bad conditions which it would prevent.

A significant opportunity for public presentation of the tentative zone plan was offered by the Pageant of Progress, a municipal exposition lasting for 21 days. The zoning exhibit included, besides the entire base map (about 10 feet x 20 feet) showing the field data in a detailed way, a considerable number of photographs, and the entire tentative zone plan conveniently hung on rollers so that any part of it could be brought to the level of the eye. Competent demonstrators were provided, two of whom were usually in attendance during the



ZONE PLAN BEING DEMONSTRATED IN THE ROOMS OF THE CHICAGO REAL ESTATE BOARD

[illegible]

hours when the pageant was open. Of the 562,418 people who entered the gates, it does not seem extravagant to estimate that 1 in 10, or more than 50,000, paid some attention to the zoning display. Perhaps as many as 5,000 listened for quite a period of time to the demonstrations and in hundreds of cases asked further respecting the purpose of zoning and the application of it to their neighborhood or block. Almost everyone who discussed the matter was able to note, from his own experience, extreme cases of need of the scheme proposed.

Shortly after the close of the Pageant of Progress, the Chicago Real Estate Board requested the opportunity of presenting the Zone Plan to its large constituency of especially interested persons. The Commission granted this request, and the Zone Plan was mounted in the Real Estate Board rooms and in accordance with a regular program,

lasting for five days, consideration was given to it by committees from various parts of the city and those representing different groups of real estate interests. Since the return of the Zone Map to the offices of the Commission, opportunity has been afforded to all comers to give it consideration, and sixty local associations sent representatives to discuss the map with the expert staff of the Commission.

To illustrate the extent and variety of the printed matter which has come to public notice in newspapers and periodicals, the headings of the most important ones are grouped on a single page.

It is the expectation of the Commission that this informal preliminary consideration of the details of its proposal will result in approval of the main features of the project and in constructive suggestions from the interests and neighborhoods affected.

Progress and Reverses of the City Manager Movement

THE month of November, 1922, was attended by marked encouragement and discouragement for the city manager movement. During the month, eight cities (Santa Rosa, Stockton, Napa, and Modesto, Calif.; Newport and Warrenton, Ore.; Springvale, Pa.; Leesburg, Fla.) adopted the manager plan, and at least two others (Dayton, Ohio, and Alhambra, Calif.) designated at the polls that the substantial citizenry are satisfied with the plan as operating in their respective communities. But the regular and steady progress of the movement was interrupted by one election at which a city manager was recalled and by two other elections at which the majority vote indicated that the manager plan by charter should be abandoned.

The recall of the manager took place in Long Beach, Calif., where, on November 29, voters to the number favored the removal of Charles E. Hewes, Manager of his third city, while but 4,900 voters either disapproved of the policy and ethics of the recall movement or wished to record their endorsement of the efficient and far-sighted business administration of Mr. Hughes during the last seventeen months in one of the fastest-growing cities in the United States.

The situation in Long Beach is one which authorities on the manager plan have strongly advised against—that of allowing the manager to become an issue in any municipal election. The charter provides for the direct recall of the manager. In Long Beach scarcely more than one-third of the more than 28,000 registered voters went to the polls at the recall election.

Other charters which contain a provision for the recall of the manager by popular vote are those of Wheeling, W. Va. (where last January, for the first time, a city manager was recalled), Grand Haven and Kalamazoo, Mich., West Palm Beach, Fla., Bluefield, W. Va., Dayton, Ohio, Durango and Montrose, Colo., Beaumont, Tex., San Diego, Calif., and Pipestone, Minn.

In Lawton, Okla., on November 7, by a vote of 1,730 to 1,296, the city reverted to the mayor and aldermanic government, effective April 1, 1923. Simultaneously with the Lawton reversal, the voters of Waltham, Mass., by a vote of 4,155 to 3,172, elected to nullify their city manager charter and revert to the old aldermanic plan. In the writer's opinion these reverses may properly be credited to an over-confident and passive majority who did not vote and to an active and powerfully organized minority who did vote.

Up to November, 1922, Hot Springs, Ark., was the only case on record of a city operating on a city manager charter which ever reverted to the old mayor and council form of government or to commission government. The Hot Springs Charter was reversed in April, 1921, after having been in force since April, 1917.

EDITORIAL NOTE.—Paul B. Wilcox, Executive Secretary of the City Managers' Association, who has furnished the foregoing statement to THE AMERICAN CITY, has also prepared a much more detailed analysis of the recent setbacks to the city manager movement, which has been published in the December number of the *City Manager Bulletin*. Copies of this issue, 25 cents each, and of the Eighth Yearbook, 55 cents, can be procured from the new Secretary of the Association, John G. Stutz, Lawrence, Kans.

Modern Methods of Disposal of Garbage, and Some of the Troubles Experienced in Their Use

By Samuel A. Greeley

Pearse, Greeley & Hansen, Consulting Engineers, Chicago, Ill.

THE practise of refuse collection and disposal in American municipalities has been characterized by some well-informed observers as a mess of mistakes. They see a wide variety of disposal methods in use, and in some cities apparently abrupt changes from one method to another, sometimes involving the abandonment of seemingly useful and expensive going plants. They see large and costly disposal works built and operated for a few years and then abandoned to gradual disintegration. The City Engineer of Gary writes, "Our incinerators have been out of service for seven years and would have to be rebuilt to make them serviceable." Los Angeles, after seven years' operation of a garbage reduction plant, has abandoned it, at least for the present, in favor of hog feeding. Baltimore, after a few years of hog feeding for garbage disposal, has turned again to reduction; and Buffalo, with hog feeding established for a while, has recently taken bids for incineration. The large reduction plant at New York and a group of incinerators at Seattle have all been abandoned in favor of dumping at sea.

The critical observer further notes many different disposal methods in use in different cities, with reported satisfactory results.

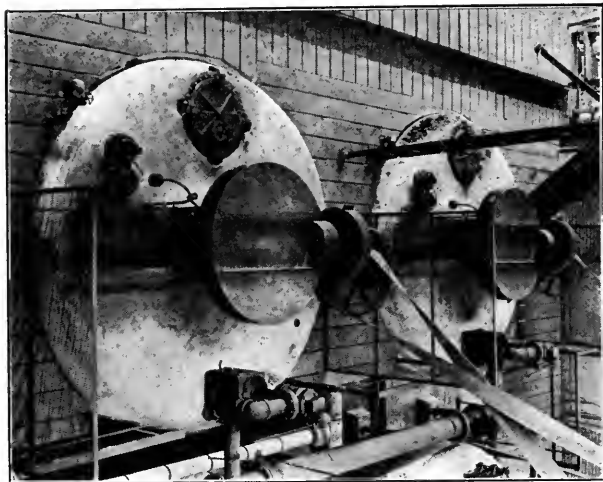
Thus, at Minneapolis the garbage is burned with some rubbish, while in St. Paul it is taken to several farms for feeding to hogs. In the metropolitan district of New York, the borough of Queens burns the garbage and rubbish, the borough of Richmond burns mixed refuse, Manhattan and the Bronx dump the garbage at sea, Newark feeds the garbage to hogs. A short distance up the state, Schenectady, Rochester and Syracuse have reduction plants. These are situations which merit interest and consideration.

Fundamental Considerations

With these observations in mind, it becomes increasingly important to emphasize the fundamental considerations largely controlling the problem of refuse collection and disposal. If service to householders and proprietors be held of first importance, with economy of operation following closely, then the observer's perspective shows the disposal of refuse as of somewhat less importance than the collection service. If two somewhat similar cities, as, for instance, St. Paul and Minneapolis, have equally good collection services, it is quite possible that general satisfaction among householders can be secured with different



A PARTIALLY COVERED REFUSE DUMP IN LOUISVILLE, KY.



TOP OF REDUCERS, ROCHESTER GARBAGE REDUCTION PLANT

methods of disposal. If the different disposal methods are well administered, the difference between them is largely one of annual cost.

Therefore, at the risk of repetition, let me state the four parts or phases of the refuse problem as follows:

- a. The house treatment
- b. The collection
- c. The transportation or haul
- d. The final disposal

Of these phases of the problem, the collection and transportation are the costly part of the work, on an annual basis. As the collection also establishes the standard of service to houses, it merits first consideration in the development of a general plan. If the development of general plans for refuse disposal, or the readjustment of existing methods, were oriented squarely to the relative importance of these various phases of the problem, the shifts and failures which our informed observer finds would not so frequently occur.

Let us note, however, that recent years have marked a promising realization of the importance of collection work and the related problem of haul. Much has been accomplished through motorization, as at Los Angeles, Montclair, Minneapolis, and elsewhere, although final economies are not yet established. Further progress toward economy has resulted through the use of the tractor-trailer and the establishment of transfer stations which permit the decrease of the expensive collection haul with an increase in cheaper quantity haul.

Importance of Haul

This review of refuse disposal practise in the light of some of the projects recently developed, particularly in the larger cities, reveals, among other things, a growing realization of the importance of haul. By haul is meant the travel of the loaded collection unit from the collection district in which the refuse is produced, to the place of disposal. This item, in fact, links up the various phases of the refuse disposal problem, from the house treatment to the final disposal. In plain terms, the gradual exhaustion of dumping-grounds and disposal sites and the increasing cost of haul

have curtailed the collection service to such an extent that public opinion has come to the front for improved service. This is a situation which, if rightly turned, can greatly assist the development of improved service through acquirement of sites, overhauling of collection equipment and construction of disposal works. With increasing costs of haul, old appropriations cannot continue the collection service desired, so that betterments and economies are requisite. If near-by dumps become filled, how can the old budget carry double or triple the haul, without curtailing the service? This can be accomplished only by more economical methods, or by increased budgets, and often both are needed. Thus the haul becomes involved with the dump and the disposal plant, for oftentimes the method of disposal will increase or decrease the useful life of dumps.

Improved Operation of Dumps

The dump, in my judgment, is likely to be a factor in the disposal of refuse in nearly all cities for many years to come. It should therefore be given much attention in operation and use. Of first importance is the sanitary maintenance. Efforts to secure a rat-proof dump are becoming more prevalent, so that garbage is taken less frequently to dumps. The 1920 New York Commission reached the general conclusion that not only garbage, but rubbish and street sweepings as well, should be kept off of dumps. This consideration was an element in the decision which had led Philadelphia to take

bids in September for a large rubbish and garbage incinerator.

As related to the problem of increasing hauls and the contingent stretching of the budget, the life of the dump becomes important. This is a local problem involving the availability and extent of dumping areas and of other methods of disposal. Thus, if mixed refuse (garbage, ashes and rubbish) is burned, the bulk to be dumped is reduced by 60 per cent or more. If the garbage is fed to hogs, only about one-third need be otherwise disposed of. The matter of available dumping-grounds has become acute in many of the larger cities, including London and Chicago, as commented on below.

A Typical Condition

In a typical large American city the refuse problem requires the ultimate disposal of the following materials: ashes, rubbish, garbage, manure, street refuse, trade refuse. In the smaller cities, garbage and rubbish assume a larger relative importance. These refuse materials are disposed of in a number of ways, of which the following are typical:

a. Most of the street refuse and ashes, with much rubbish, is taken to dumps. Measured by quantity, by far the larger portion of the refuse of a typical city is dumped.

b. Manure (stable refuse) is mostly transferred to farms and truck gardens, but some of it frequently reaches the dumps.

c. There is nearly always some salvage, chiefly of rubbish. This is often done by scavaging dumps, but sometimes in specially built plants.

d. Hotel and restaurant garbage is generally fed to hogs, or rendered for grease and tankage. Relatively inert trade refuse is dumped. Thus the accessibility of dumps (or loading stations) affects the cost of industrial output.

e. A variety of special methods of disposal have been developed for garbage, sometimes with the admixture of rubbish, ashes, and other refuse materials.

Thus, for a typical condition, we find disposal by dumping used for as much of the refuse as can be dumped without creating objectionable conditions; with special disposal works developed for the rest. There appears also to be in some cities a tendency to increase the proportion of refuse dumped either on land or at sea, sometimes resulting in the abandonment of the specially developed works.

The location and accessibility of dumping-

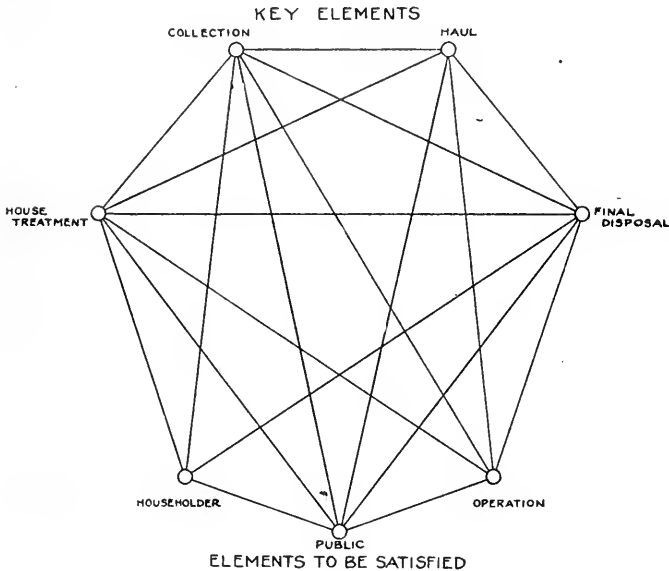
grounds is, however, a direct factor in the cost of collection and haul; and dumps gradually become permanently exhausted from refuse disposal. Cities should therefore give careful consideration to their dump resources, with particular reference to the collection service and to other matters of disposal which decrease the amount of refuse to be dumped.

What Determines Length of Haul?

The matter of haul may therefore have a determining influence on the development of special methods of disposal and the conservation of dumps; and it is therefore necessary to set up a measure for the relative value of haul. Local conditions will largely make up such a yardstick, but the effect on collection service and cost is one of the chief factors. Some data on the rate of collection work are given in the table. As an average figure for a typical large city, let us assume that a collection unit of two men can make collections of house refuse at the rate of 75 pick-ups per hour. If the unloading point is so located as to require 4 hours of haul, each such collection unit will serve about 300 houses per working day. If the team haul be reduced to 3 hours, the number of pick-ups (or houses served) will be increased to 375 per day. Under some local conditions the team haul requires as much as 5 hours.

In larger cities the team haul can be supplemented by quantity haul. If the team haul, averaged with collection service, costs \$4.50 per ton, quantity haul may cost only a third as much, or about \$1.50 per ton. What, then, is the economical relation between team haul and quantity haul? Obviously, this can be determined only after a careful study of all the local conditions, including the rate of collection work, the travel of teams and motors, the available locations for transfer stations, the life and location of dumps and disposal plants, rates of wages, and other similar considerations. But the yardstick for haul is the number of houses to which collection service can be given by a unit of collection and haul equipment. With due regard to the life of disposal works and to sanitary conditions, the work of collection and haul should be planned to serve the maximum number of houses per day.

CHART SHOWING
FUNDAMENTAL CONSIDERATIONS IN THE REFUSE DISPOSAL
PROBLEM AND THEIR MANY RELATIONSHIPS



Conditions in the United States

Refuse disposal in America is in process of development. Minneapolis, under the guidance of N. W. Ellsberg, City Engineer, and J. A. Jensen, formerly of the Water Department, has recently built loading stations to shorten haul, has motorized its garbage collection, and is considering an increase of incinerator capacity. John Kloren, City Engineer of New Orleans, has developed disposal by incineration only after a most careful study of haul economics. Chicago, with the lake front still available for the dumping of cinders and refuse, is feeling the pinch of filled-up dumps and longer hauls. Indianapolis has developed a tractor-trailer system for ash collection to decrease the increasing costs of collection and haul. There is a limit, in most cases, in built-up communities, to the near-by dump. Special methods of disposal and a comprehensive general plan for collection and haul are the necessary steps if service to householders is not to be curtailed. The wise communities are planning now the conservation of dumps.

What About Failures?

The term "failure," as applied to refuse disposal projects, commonly refers to the abandonment of a finished disposal plant

representing invested capital and ready for operation. If a considerable sum of public money is put into the works, and these works are not used but are allowed to disintegrate, something is certainly wrong. Many will say that such occurrences are rare, if not unknown. Let me name a few cities where some such upsets have occurred for part or all of the refuse: New York, Buffalo, Minneapolis, Chicago, San Francisco, Los Angeles, Seattle, Gary, Fargo and Madison.

Such upsets, however, are not the real failures. They are the symptoms of a deeper trouble. Some of the causes of these upsets and plant abandonments are as follows:

(a) A failure, in the first place, on the part of city officials, to appreciate the true measure of a refuse disposal project. Communities should understand that the first objective is a city of clean houses, with the construction of a disposal plant second.

(b) A failure to secure and adopt a general plan for all the refuse disposal work, including proper ordinances and kitchen cards, collection equipment and management, transfer stations, hauling equipment, dumping facilities, disposal work and the like.

(c) Failure to profit by cooperation with experts of independent judgment who can bring to the local problem the helpful experiences of other situations acquired through years of study and participation.

(d) A failure to operate the work with reasonable skill and economy.

Hindsight is always better than foresight, but we are accumulating much experience that is of value in developing a general plan for a city, and this experience should be used.

Summary

A review of refuse disposal practise, including some of the mistakes which have been made, clearly indicates the need for a broader development in the solution of the problem. The final objective of a clean city should stand out, and should be accomplished through a sound general plan based on experience with tried methods, eco-

nominically operated. The complexity of the problem is obvious.

Paul Hansen has devised a chart, reproduced herewith, showing the fundamental considerations in the refuse disposal problem and their many relationships. There are four principal elements to deal with and three to be satisfied, including householders, the public, and the operation and its economy. Between these four factors, namely, house treatment, collection, haul and final disposal, and the three elements to be satisfied there appear to be nineteen different relationships. Thus, collection is influenced not only by the house treatment and haul, but also by items of cost in operation, public considerations, methods of final disposal, and the like.

Out of these various relationships there is some combination of house treatment, collection, collection equipment, transfer sta-

tions, haul, disposal plants, dumps, sites and locations, business management and accounting which will produce the most favorable solution. Like all major engineering problems, but in a marked degree, the refuse disposal problem is one which cannot be reduced to mathematical calculation, but must be solved on a basis of experience by those who have had opportunity to study and correlate this experience in a broad manner.

RATE OF COLLECTION SERVICE—DATA FROM OFFICE NOTES AND FIELD INVESTIGATIONS—PEARSE, GREELEY & HANSEN, SEPTEMBER, 1922

| City | Material | Number of Houses per Wagon per Day |
|-----------------|---------------|------------------------------------|
| Pittsburgh..... | Rubbish | 145 |
| Rochester..... | Rubbish | 167 |
| Charleston..... | Garbage | 250 |
| Fargo..... | Garbage | 210 |
| Toledo..... | Garbage | 275 |
| Montclair..... | Garbage | 300 |
| | Ashes | 200 |

Protecting Highways from Overload

Maryland Uses Portable Weighing Devices to Determine Extent of Overload on Trucks

AT the 1922 National Conference on Weights and Measures, held in Washington, John N. Mackall, Chairman and Chief Engineer of the Maryland State Roads Commission, spoke in an interesting manner on the "Protection of Highways by Means of Portable Weighing Devices." While there was an excellent opportunity for Mr. Mackall to speak rather strongly against those who would have highway engineers build a road to carry any load, he showed the method which has been employed in Maryland in solving to some degree the difficulties which are now being experienced with trucks carrying excessive loads.

In Maryland the law requires that a man shall not carry more weight on his truck than his license calls for, and, further, that he shall not carry a load in excess of 650 pounds per inch of width of tire. Under no consideration may a motor vehicle of any kind carry loads in excess of 20,000 pounds—5 tons of load and 5 tons of dead weight.

An Illuminating Study

The road from Washington and Balti-

more to Philadelphia during the war carried a tremendous amount of traffic—war traffic and all other kinds of traffic—but it was all called war traffic. This road carried enough traffic to destroy it as every other highway on the Atlantic seaboard was destroyed during the war. The Maryland State Roads Commission demonstrated that if all the loads of 5 tons or more had been carried in units of 3 tons, allowing the manufacturers' rated efficiency for the 5-ton units over the 3-ton units, it would have cost those operators an additional \$15,000. It cost the state of Maryland, however, the tidy sum of \$600,000 to remedy the damage which was done at a saving of \$15,000 to the truck operators.

The state of Maryland passed a law limiting the weights of motor trucks on highways and then started out to enforce it. All that was used was a small portable weighing device, two of which together weigh about 100 pounds. They are put in the back of a light touring car, and the inspector starts out on the road. If he finds a truck that he thinks is overloaded, he weighs it; then if it is overloaded, the

amount of the overload is removed and the driver is taken into court the next day. The first day they weighed trucks in Maryland, they obtained 60 arrests and convictions; the first week brought something like 150, the second week about 50, the third week about 15, and the fourth week

none. Of the 130,000 vehicles in the state of Maryland to-day, not 1-100 of 1 per cent is carrying an overload at any time, simply because the inspectors carry the small portable weighing device which can be put under the truck, jacking up the rear end and recording the weight.

Spreading Sand and Stone on Streets

Rockford, Ill., Engineering Department Develops Spreader Which Successfully Applies Blotter to Streets Treated with Bituminous Material

By B. C. Harvey

Public Engineer, Rockford, Ill.

THE cost of spreading sand and gravel on streets in Rockford that have been treated with Tarvia was found to be excessive, and the result obtained from spreading stone by hand labor was very poor. We therefore came to the conclusion that we could make a spreader which would give us good results.

Our first experience was with a lime sower, as illustrated. This was bought solely for the purpose of experimenting. The capacity of the sower was only about 14 cubic feet, and the construction was

altogether too weak to handle the amount of gravel which we desired to carry in one load.

The stone spreader shown in the second illustration was developed by our Engineering Department as a result of the experiments with the earlier machine. This machine has a capacity of 6 cubic yards of material and is mounted on the chassis of an old concrete mixer. The chains, gears and other mechanical parts were purchased from the International Harvester Company. It is built to spread the stone to a



OLD STYLE OF SAND AND STONE SPREADER THAT WAS USED AS A BASIS FOR THE DESIGN OF THE SPREADER SHOWN ON THE NEXT PAGE



ROCKFORD'S HOME-MADE SPREADER, WHICH HOLDS 6 CUBIC YARDS AND DISTRIBUTES THE MATERIAL EVENLY IN AN 8-FOOT PATH

width of 8 feet, which is the same width as the distribution of Tarvia.

We are using a Holt Model T-35 tractor to haul the machine. The weight of the tractor is about $1\frac{1}{2}$ tons, and we have been able to handle 6 yards of pea gravel, making about 9 tons of weight, together with the spreader itself, which weighs about $1\frac{1}{2}$ tons, making a total of $10\frac{1}{2}$ tons which is hauled

over the oiled streets by this tractor.

We had tried to do this hauling with trucks, but had found that where the streets were on a grade or had excessive crown, we were unable to handle the stone spreader satisfactorily; therefore, our Holt tractor was put to work, and it has handled the job satisfactorily under all road and weather conditions.

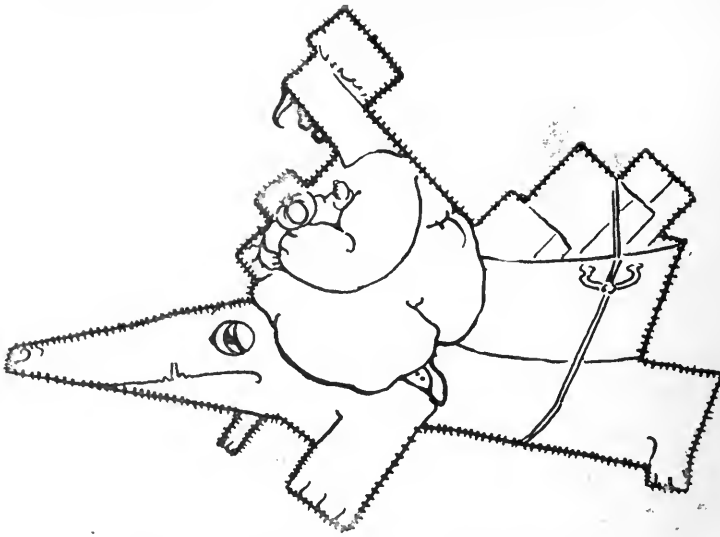
Through Debt to Prosperity

THE taxpayers of Los Angeles have voted an initial bond issue of \$12,200,000 for the immediate relief of the sanitary situation of a city that has outgrown its sewer system. Not many months will elapse before the beginning of actual work on the main sewers, which are supposed to be ample for a city of 3,000,000. It is estimated that from 90 to 95 per cent of the entire \$12,200,000 will, within the next three years, be spent for the industrial products of the city and for labor in it, so that this sum goes into active circulation among the taxpayers who voted it, and will add just that much to the general prosperity of the city.

It will take about three years to complete the entire present portion of the general

project. Work on the treating plant at Culver City and another at Hyperion has already begun. From 3,000 to 5,000 men will be employed for a period of three years. Locally manufactured brick, tile, cement and lumber will be used entirely. The clay and cement pipe industry will be stimulated by hundreds of miles of laterals made possible by an adequate outlet. New industries hitherto kept away by lack of adequate sewage disposal will be brought in.

These general features of employment and the use of local manufactured products make it clear that the taxpayers will in reality be paying the vast sum for the total work right back into their pockets, rendering the bonds an immediate asset, even though they are an eventual liability.



45TH ALDERMANIC DISTRICT, BROOKLYN, N. Y.

For rapid transit try the gerrymander

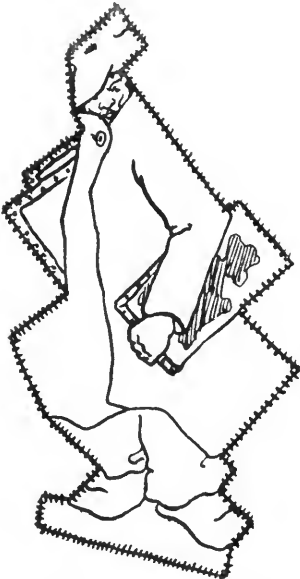
"P. R." versus the Gerrymander

By George H. Hallett, Jr.

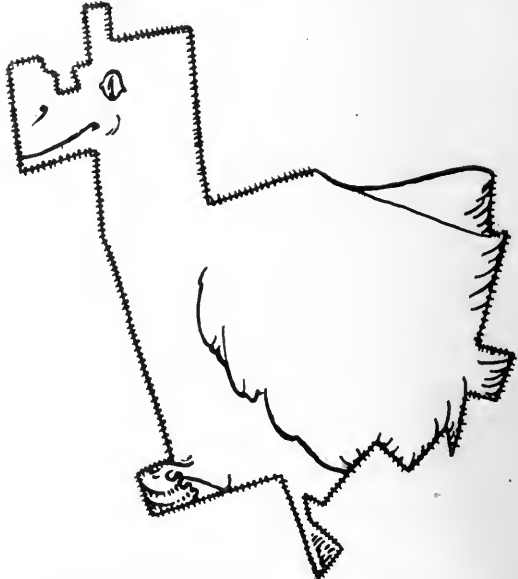
(Drawings by Mary Spencer Lee)

PROPORTIONAL representation is being considered by the city of New York for future elections of its Board

of Aldermen. It has recently received considerable publicity, and a Proportional Representation Committee has been formed,



2ND ALDERMANIC DISTRICT
MANHATTAN
A Greenwich Village inspiration



DISTRICTS LIKE THE 34TH ALDERMANIC DISTRICT, BROOKLYN, SHOULD BE AS EXTINCT AS THE DODO

with headquarters at 8 West 9th Street, with many prominent citizens among its members.

"P. R." is one of the principal features in the tentative draft of a new charter received November 14 by the New York City Charter Commission from its counsel, F. W. M. Cutcheon.

"The purpose at least to approximate a condition of home rule is responsible for the inclusion of the provision for proportional representation," Mr. Cutcheon explains. "A number, possibly a majority, of the members of the Commission seem to hold the opinion that it would be distinctly unwise to confer broad and, in large part, unrestricted powers upon the municipal legislative agencies, unless some means can be devised to assure a more representative and responsible popular body than ordinarily is likely to be returned under the present electoral system. No one has been able thus far to suggest any other device intended to accomplish that end which seems as well adapted to the purpose in view as the system of proportional representation."

If this recommendation is accepted, the city will be redivided into a few large districts electing several members each, and in each district every important political group will obtain the same share of the district's members that it casts of the district's votes.

One of the evils which P. R. is designed to correct is the gerrymander evil—the drawing of district lines so as to make effective as many votes as possible of one political party, and to waste as many as possible for other parties. With minorities as well as majorities fairly represented within each district, this practise could have little or no effect.

Under the present method of plurality election in single-member districts, New York has developed gerrymandering to a fine art. In the accompanying drawings the exact shape of three of the Aldermanic Districts in Manhattan and Brooklyn is shown. The boundaries, except borough lines, are indicated by cross-marks. The artist is responsible for the interior decorations only.

Taxation Statistics of Pennsylvania's Third-Class Cities

With Estimated Population and Assessed Valuation for 1922

THE figures in the accompanying table are from a chart of 1922 Taxation Statistics as issued by James F. Woodward, Secretary of Internal Affairs of Pennsylvania.

The estimated populations of the thirty-eight third-class cities, as given in the table, have been used in arriving at the per capita figures shown. These estimated populations are based on the 1920 Census, with all annexations since the taking of the Census included, and a 2 per cent increase, which we believe is a fairly close estimate for the year 1922. The assessed valuation is the valuation placed thereon by the cities themselves and usually is considerably higher than the valuation on the same property for county purposes. The column of estimated Percentage of Full Value is an estimate obtained from officials in a position to make such an estimate. However, in most cases

it is simply a guess by those officials. The total millage column includes the millage levied for general purposes, poor fund and improvements and for interest and debt service, the figures for the latter being also shown separately in another column.

Only four of the third-class cities levy a poor tax. In most other cities this tax is levied by the county. From the column of Assessed Valuation per Capita it will be seen that the lowest is DuBois, with an assessed valuation of \$315, while the highest is Clairton, with an assessed valuation of \$1,423 per capita. As these cities are within a few thousand of the same population, it appears to show that the method of assessing varies to a large extent among the different cities. DuBois is estimated to be on a 33 per cent basis, while Clairton is on a 60 per cent.

A comparison of the per capita tax levied

1922 TAXATION STATISTICS THIRD CLASS CITIES OF PENNSYLVANIA
(School and county figures are not included)

| | 1922 Estimated Population | Assessed Valuation | Percentage of Full Value | Total Millage Levied by City | Millage for All City Purposes If on Full Values | Millage for Interest and Debt Service | Assessed Valuation per Capita | Per Capita Tax Levied by City |
|--------------------|---------------------------------|-----------------------|--------------------------------|---------------------------------------|---|--|--|-------------------------------------|
| Reading..... | 109,940 | \$98,844,778 | 90 | 10 | 9 | 2.828 | \$899 | \$8.99 |
| Erie..... | 104,134 | 115,454,613 | 80 | 11.9 | 9.52 | 2.889 | 1,109 | 13.19 |
| Allentown..... | 80,467 | 70,000,000 | 60 | 8 | 4.8 | 1.548 | 869 | 6.96 |
| Harrisburg..... | 78,635 | 65,993,570 | 60 | 13 | 7.8 | 3.42 | 839 | 10.91 |
| Wilkes-Barre..... | 75,304 | 89,310,210 | 70 | 10 | 7 | 1.795 | 1,186 | 11.86 |
| Johnstown..... | 68,723 | 71,639,710 | 80 | 12.2 | 9.76 | 2.2 | 1,053 | 12.85 |
| Altoona..... | 62,761 | 57,915,105 | 85 | 7.6 | 6.375 | 1.5 | 923 | 6.92 |
| Chester..... | 59,190 | 59,563,101 | ..... | 8 | ..... | ..... | 1,006 | 8.05 |
| Bethlehem..... | 55,232 | 62,932,684 | 70 | 8.5 | 5.95 | 1.5 | 1,139 | 9.68 |
| Lancaster..... | 54,213 | 31,635,455 | 33.333 | 11 | 3.6666 | 4 | 584 | 6.42 |
| York..... | 48,462 | 36,768,469 | 67 | 10 | 6.7 | 2 | 759 | 7.59 |
| McKeesport..... | 47,716 | 38,612,945 | 65 | 10 | 6.5 | 2 | 809 | 8.09 |
| New Castle..... | 45,837 | 32,363,700 | 55 | 9.5 | 5.225 | 1.25 | 706 | 6.74 |
| Williamsport..... | 36,922 | 23,594,125 | 60 | 13.5 | 8.1 | 2.024 | 639 | 8.63 |
| Easton..... | 34,489 | 33,138,992 | 55 | 10.5 | 5.775 | 2 | 961 | 10.08 |
| Hazleton..... | 32,912 | 23,680,164 | 60 | 10 | 6 | 2.4 | 719 | 7.19 |
| Lebanon..... | 25,136 | 18,710,436 | 67 | 10 | 6.7 | 1.75 | 744 | 7.44 |
| Butler..... | 24,254 | 19,125,000 | 50 | 10 | 5 | 2.7 | 788 | 7.88 |
| Pottsville..... | 22,314 | 11,083,356 | 35 | 13 | 4.55 | 3 | 496 | 6.45 |
| Sharon..... | 22,182 | 15,043,540 | 66 | 13.5 | 9 | 3.5 | 678 | 9.16 |
| Oil City..... | 21,700 | 13,471,000 | 70 | 11 | 7.7 | 1.09 | 621 | 6.83 |
| Duquesne..... | 19,391 | 17,921,250 | 70 | 10 | 7 | 1 | 924 | 9.24 |
| Carbondale..... | 19,013 | 10,757,458 | 72 | 9 | 6.48 | 1.8 | 566 | 5.09 |
| Monessen..... | 18,542 | 11,096,150 | 50 | 12 | 6 | 3 | 598 | 7.18 |
| Pittston..... | 18,867 | 9,875,000 | 45 | 13 | 5.85 | 3 | 528 | 6.80 |
| Sunbury..... | 16,035 | 5,833,395 | ..... | 12.5 | ..... | 2.5 | 364 | 4.55 |
| Uniontown..... | 15,921 | 10,357,378 | 33.333 | 16 | 5.333 | 3 | 651 | 10.41 |
| Bradford..... | 15,835 | 8,189,125 | 60 | 15 | 9 | 3 | 517 | 7.75 |
| Meadville..... | 14,859 | 6,863,381 | 50 | 19 | 9.5 | 9 | 466 | 8.79 |
| Coatesville..... | 14,805 | 13,254,690 | 70 | 8.5 | 5.95 | 1.8 | 895 | 7.61 |
| Connellsville..... | 14,080 | 7,919,306 | 50 | 16 | 8 | 3 | 562 | 9.00 |
| DuBois..... | 13,955 | 4,386,895 | 33.333 | 20 | 6.6666 | 5 | 315 | 6.29 |
| Clairton..... | 10,992 | 15,647,380 | 60 | 9 | 5.4 | 1 | 1,423 | 12.81 |
| Franklin..... | 10,170 | 5,871,510 | 35 | 11 | 3.85 | ..... | 577 | 6.35 |
| Monongahela..... | 8,862 | 4,886,235 | 40 | 14 | 5.6 | 4 | 551 | 7.72 |
| Lock Haven..... | 8,729 | 4,225,680 | 60 | 11 | 6.6 | 3 | 484 | 5.33 |
| Titusville..... | 8,600 | 5,550,795 | 75 | 12 | 9 | ..... | 645 | 7.75 |
| Corry..... | 7,373 | 4,776,070 | 70 | 14.5 | 10.15 | 2.88 | 648 | 9.39 |

does not necessarily show an economical or efficient government in the low levy and an extravagant government in the high levy, as the high levy usually indicates a greater amount of service rendered by the municipality, such as the cleaning and paving of streets, the collection of garbage and ashes, and the maintenance of park systems. The purpose of the comparative chart is to allow the officials and citizenship of the communities affected to notice any peculiarities of their city and to inquire further into the facts and determine whether a condition in their city, such as an especially low assessment or an especially high millage, is warranted, and to inquire into conditions in other cities where the figures show a decided difference from their own communities. The table shows on its face that there is no uniform rule for the assessing of property and that, while a part of the difference in assessment per capita may lie in the higher or lower value of real estate in the com-

munity, this could in no manner account for the entire difference.

Police Statistics of Pennsylvania Cities

The Pennsylvania Bureau of Municipalities (Harrisburg, Pa.) has issued in blueprint form two charts of police statistics for third-class cities, which will be sent to any reader of THE AMERICAN CITY on application. The figures include police court receipts, number of arrests, number of employees, total appropriation for police department, salaries of police chief and other officers, number of motor-cycles in use, and other data.

According to the statistics, Uniontown was the best-policed city, for there was one policeman for every 838 residents. Wilkes-Barre was second, with a policeman for every 886 persons, and Reading was third, with a guardian of the peace for every 894 persons.

The New Filtration Plant of the Norfolk Water-Works

By David A. Decker

Principal Assistant Engineer, Department of Public Works, Norfolk, Va.

THE city of Norfolk is just completing another unit of its water-supply, which is known as the Lake Prince Development. This supply is located about twenty miles due west from the city in Nansemond and Isle of Wight Counties. The Lake Prince reservoir is an artificial lake formed by damming the valley of Exchange Creek at a point about one mile north of its exit. It holds 4 billion gal-

West of the filtration plant and connected with it is the distribution pumping station.

The coagulating basins are built of re-inforced concrete, and are superimposed upon the top of the clear water reservoir. The weight of these basins and the water therein is carried to the bottom of the clear water basin on 20-inch circular columns spaced 15 feet 6 inches center to center. These basins are each 75 feet wide, 230



POURING THE BOTTOM OF THE NEW RESERVOIR OF THE LAKE PRINCE DEVELOPMENT, NORFOLK, VA., SHOWING THE METHODS OF HANDLING CONCRETE

Photograph taken the latter part of 1921

lons and will furnish 17 to 18 million gallons daily. This water is to be pumped from the dam to the filtration plant located in the western section of the city, through an 18.5-mile pipe line made up of 30- and 36-inch pipe.

The filtration plant consists of two coagulating basins with a capacity of 2,500,000 gallons; a clear water reservoir holding 3,000,000 gallons; an aerator; twelve one-million-gallon concrete filter units; and a chemical storage house and equipment.

feet long and 10 feet deep, with diversion walls in the center parallel to the long sides for three-quarters their length. Mud valves, connected with sewer outlets, are placed at frequent intervals in front of the baffles in the coagulating basins, and also along the diversion walls, in order that the basins may be readily cleaned by flushing.

The mixing chamber and aerator are located at the end of the basins nearest the filter building. The mixing chamber is



COAGULATING BASINS AND AERATOR, NEW WATER-SUPPLY, NORFOLK, VA.

baffled to insure thorough mixing of the alum solution with the raw water. Directly over the mixing chamber is the aerator, built in the form of a prism. It is 117 feet in length and 9 feet wide at the base, with seven sets of channels on each side, forming weirs to break up the water as it flows downward to the coagulating basins.

In constructing the clear water and coagulating basins of concrete, a strip of 16-ounce copper, 6 inches wide, was placed in each construction joint. This copper strip or dam proved very effective in making water-tight joints. The basins have had 10 feet of water in them for several months, yet the roof of the clear water basin is dry, without any signs of seepage through either the joints or the concrete.

The Filter Tanks

The filter tanks, with "false bottoms" instead of the usual manifolds, are built in two rows of six each facing a central pipe gallery and operating floor. The wash water gutters are of concrete, extending from the rear end of the filter bed to the wash water channel at the front or gallery end of the filters. The false bottoms are 8 inches thick, of heavily reinforced concrete, through which are placed $\frac{3}{4}$ -inch galvanized nipples on 6-inch centers, surmounted with $\frac{3}{4}$ -x- $\frac{3}{8}$ -inch bronze reducing couplings, into which are screwed type "S" umbrella strainers furnished by

the New York Continental Jewell Filtration Company. The chamber under the false bottoms is 2 feet high and is connected directly through the controllers to the clear water flume. The filtering medium consists of a level bed of sand 30 inches deep overlying a bed of gravel 16 inches deep, graded from 2-inch size at the bottom to 0.1-inch size at the top. The sand is standard 14- 36-inch mesh.

The raw water flume, built of reinforced concrete under the operating floor, and forming the roof of the pipe gallery, is connected at each end of the two rows of filters with the coagulating basins by 36-inch cast iron pipes.

The clear water duct is located between the two rows of filters under the pipe gallery. It is 6 feet 10 inches wide and 6 feet 6 inches high. The sewer flumes are formed at each side of the clear water duct and are connected to a 36-inch concrete sewer, which disposes of the wash water. At the end of the clear water duct, a 36-inch cast iron pipe conveys the water to the clear water basin. In the end of the clear water duct nearest the pumping station is an emergency suction, which runs directly to the pump suctions.

Over the operating floor and just below the roof is a wash water tank which holds 35,000 gallons. A wash water pump with a capacity of 5,500 gallons per minute directly connected to a 75-horse-power,

2,300-volt motor, will furnish water for washing filters ordinarily, the tank being used only as a reserve. The wash water tank has an advantage over the usual wash tank, in that it is 101 feet long, 14 feet 5 inches wide and only 3 feet 9 inches high, giving an almost uniform head on the filter beds during the period of washing.

All valves are operated hydraulically. Each filter has its own individual operating table. Simplex Mercury type indicating loss of head gages are installed on the front wall of each filter. Simplex effluent rate controllers are installed in the filter gallery.

The filter building is a handsome structure, 140 feet long and 62 feet wide, built of reinforced concrete and tapestry brick, and trimmed with Indiana limestone. In addition to the twelve concrete filter tanks, each 16 feet wide by 22 feet long, with 352 square feet of effective sand area, the building contains the alum tank rooms, and liquid chlorine closets in duplicate, in which Wallace & Tiernan Type ADAV chlorinators have been installed. At the other end of the building are located the office and laboratory on the operating floor level. Down-stairs are the lockers, wash rooms, and lavatories.

The alum dose is applied automatically with orifice boxes directly into the raw water line just before it enters the mixing chamber. The liquid chlorine is applied in the suction well of the clear water reservoir, the control being connected to the Venturi tube on the discharge line from the pumps.

The Pumping Station

The pumping station, similar in design to the filter building, is a fire-proof structure 100 feet long by 82 feet wide. It contains an engine room, a boiler room, a machine shop, wash rooms, and lavatories. This building is so constructed that it readily admits of future extension when more boiler or engine room space is required. For the present it is ample for the two 7-million-gallon centrifugal pump-

ing units directly connected to two 400-horse-power, 2,300-volt slip-ring motors just installed, and for the two 12-million-gallon horizontal steam pumps, and two 250-horse-power water tube boilers, one unit of which will be placed shortly. The engine room is wainscoted with white tile, and the floor will be laid with 6-inch square red tile when the pump installations are finished. The room is attractively lighted with indirect fixtures in the ceiling and wall brackets around the top of the wainscoting.

Power for operating the motors is delivered from a steel transformer station erected in the rear of the building, stepping the current down from 11,000 volts primary to 2,300 volts secondary, and subsequently to 220 volts for the small motors



NORTHWEST CORNER OF PUMPING STATION AND BOILER ROOM OF THE LAKE PRINCE DEVELOPMENT, NORFOLK, VA.

and 110 volts for the lighting fixtures. The city owns the transformer station and pays the Virginia Railway & Power Company on primary current basis for power used.

A railway siding extends from the main line of the Norfolk & Western Railway nearby to the concrete coal bunkers adjoining the boiler room. In addition to the bunkers, a large space is available for storage in case of any anticipated coal shortage. With the installation of the boiler and steam pumping unit, a brick chimney 150 feet high, of a design that will conform to the architecture of the plant, will be erected.

The filtration plant is constructed with the idea of its capacity being increased to 24 million by duplicating the present layout on the side adjacent to Parker Avenue,



A SECTION OF THE CLEAR WATER RESERVOIR AT NORFOLK, VA., DURING CONSTRUCTION

when such increase is required.

An important construction feature was that the bottom of the clear water basin was placed 11 feet below the ground surface and about 7 feet below the normal ground water line in fine running sand. To relieve the ground water troubles, $1\frac{1}{2}$ -inch well points were put down on 20-foot centers around the entire area of the excavation, and connected to two 200-gallons-per-minute reciprocating pumps. The pumps were operated constantly until the bottom and sides of the clear water basin were poured. The excavation was made with a steam shovel, and the concrete was poured without water troubles.

Another interesting phase of the work was that no shoots or towers were used in placing the concrete. A caterpillar crane handled the concrete dump-cars from the mixer to an industrial track immediately adjoining the sections of the clear water basin to be poured.

Construction work on the plant was begun July 5, 1921, and was completed February 15, 1922. Sanford & Brooks Company, of Norfolk, were the general contractors. The work was done under the direction of Walter H. Taylor, III, City Engineer, David A. Decker, principal assistant engineer, and Normal Z. Ball, designing engineer.

Personnel of the Boston Fire Department, 1872 and 1922

IN 1872, the year of the Great Fire in Boston, the membership of the Fire Department consisted of approximately 475 men, 385 of whom were call members and the other 90, permanent men engaged in driving and operating the apparatus. It was necessary at the time of the fire to enlist the services of approximately 500 additional men. The pay-roll of the Department in

1872 amounted to a little over \$221,000, while in 1922 approximately \$2,400,000 will be expended for salaries. To-day, the Department gives employment to 1,400 men, 1,200 of whom comprise the actual fire-fighting force. The entire Department is now on a permanent basis and there are no call men. These figures strikingly show the development of the Department.

Forward Steps in City and County

Mayors

Promoting Team Work Among City Employees

MERIDIAN, MISS.—The following letter, which was sent to each of the city employees of Meridian when the present administration took office last January, may offer a suggestion to other mayors in their efforts to stimulate a spirit of individual responsibility and of mutual helpfulness in the various departments of the city government:

TO THE CITY EMPLOYEES:

Permit me to congratulate you on your appointment as one of the city's public servants for the next twelve months. The Council evidently considered you capable and worthy of the honor conferred upon you and it is to be hoped that you will fully justify this confidence in the service you render the public. To fully measure up to your high calling you must be in love with your job, you must do your whole duty and a little more, and then be sorry that you could not do better. You must know that money will not buy the best there is in man, and appreciate the fact that the fellow whose sole interest in his job is the dollars he gets out of it, never earns what he gets, be it much or little. We must make the community we serve better by reason of our service, else we are unworthy to be called public servants.

It is the purpose of this administration to make 1922 a banner year in municipal service and I want to impress upon you the important part you are to have in this program in order that you may feel the weight of your individual responsibility. The entire city force, from the Mayor and Councilmen down to the janitor in the City Hall, is an endless chain driving the municipal machinery for a bigger, a better and a cleaner Meridian. You are an individual link in this great chain, and a chain is never stronger than its weakest link. If you are weak, if you are negligent, if you are a whiskey drinker, if you are incompetent, if you are not in love with your job, if you are disloyal, it is just a question of time when our municipal chain will break and the public service will suffer.

So don't imagine that you are an unimportant part of the city's organization, but remember at all times that you are a link in the municipal chain and so long as you maintain your link by rendering faithful, intelligent and courteous service to the public I feel that you are entitled to the confidence and respect of the public, as well as proper recognition by the City Administration.

With compliments of the season, I am,
Yours for the service,
(Signed) J. W. PARKER,
Mayor.

Public Safety Departments

Jail Sentences for Speeders

TOLEDO, OHIO.—Last May the City Council of Toledo adopted a new traffic ordinance containing exceptionally drastic provisions for violations of the traffic rules. The penalty sections are as follows:

Section 3. Any person upon being found guilty of violating any section or part of section of this ordinance, or of Section 1342 of the Toledo Code of 1919, shall be subject to the following penalties: Such person shall be prohibited from operating or driving a motor vehicle or motor-cycle on the streets of the city of Toledo, for a period of not less than thirty days nor more than sixty days, and in addition thereto shall be fined not less than \$5 nor more than \$200, or imprisoned in the workhouse not more than six months, or both.

Section 4. Whoever operates any motor vehicle or motor-cycle on the streets of the city of Toledo during a period for which said person has been prohibited from operating or driving a motor vehicle or motor-cycle under the provisions of this ordinance shall, if convicted of such offense, be imprisoned in the workhouse not less than ten days nor more than sixty days.

The prohibiting from driving for a period of 30 to 60 days of anyone convicted of speeding has proved very effective. A great number of convicted speeders need their machines to carry on their business, and to be deprived of their cars for a month or

two teaches them a very good lesson. The names, addresses and license numbers of all convicted speeders are printed daily in our *Police Bulletin*. Our officers give this their special attention and it seems that no one has yet violated the orders not to drive for certain periods.

Speeding offences have been cut 60 to 70 per cent since a workhouse sentence has been one of the punishments. The fact that 25 per cent of the speeders have been sent to the workhouse has put more fear into the speeder than any other method previously used.

The jail sentence, in my estimation, is the best way of combating the speeder, but I think an improvement could be made in our ordinance by eliminating a clause which makes it necessary to show that traffic conditions make speeding dangerous and by making it a violation regardless of traffic conditions.

THOMAS E. O'REILLY,
Captain of Police, Toledo Traffic Bureau.

City Engineers

Auburn's New Municipal Garage

AUBURN, N. Y.—The city of Auburn has completed the erection of a municipal garage for the housing and repair of motor vehicles of the Department of Public Works. These include at present the motor equipment used in our Highway Department, consisting of two trucks, three touring cars and a flusher; also a Health Department car and tools and other equipment.

The building is 36 feet wide inside by an average length of 108 feet. It is of brick

construction and is practically fire-proof, only the roof and doors containing combustible material. The roof is carried on I-beams, designed to carry a second story at some future date. The building is divided into two compartments by a fire-proof wall. The repair shop measures 36 feet by 34 feet.

The building has a steam heating plant, toilets and electric lights. Ample light and ventilation are provided by skylights.

The building was designed and erected under the direction of the City Engineer. The cost of the building complete, including heating, lighting and plumbing, was \$13,500. Ludke Brothers, contractors, were the builders.

M. F. DULLEA,
City Engineer.

Park Departments

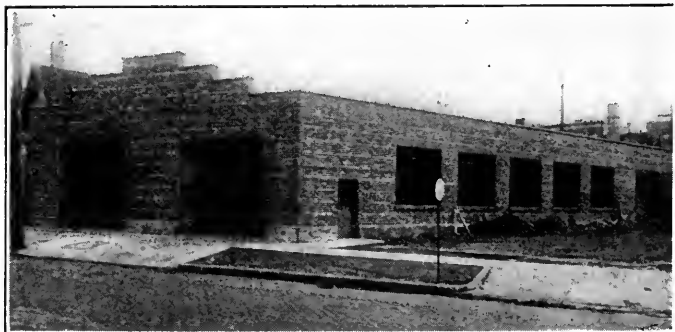
Detroit Votes for an Aviation Field

DETROIT, MICH.—At the recent November election the people of Detroit, by a vote of 67,073 to 29,551, voted to establish an aviation field under the control of the Department of Parks and Boulevards. This favorable vote was the outcome of three years of effort by the city government.

In 1919 the Common Council had authorized condemnation proceedings and approved a recommendation of the Mayor, that a committee of three be appointed to act with the proper municipal authorities in the work of developing an aviation field. Several sites were considered and the necessary legal action started. Before the condemnation proceedings came to trial in the courts certain opposition developed and the

question of necessity was raised. In condemnation cases the jury must first agree that a necessity exists, after which it proceeds to fix the awards.

After the matter had been dormant for a while and had not been brought to a successful conclusion, we felt that an appeal to the people direct would be in order. The matter was resubmitted to the Mayor and the Common Council



AUBURN'S MUNICIPAL GARAGE

in the form of a proposal that the question be submitted to the electorate for an advisory expression.

On October 3, 1922, the Common Council passed a resolution which read in part as follows:

Whereas, it is generally conceded that the greatest factor in retarding the growth of aeronautics in this country is the lack of established landing fields, and

Whereas, the principal aerial routes, so far developed, are along the natural land routes across the continent and new routes now in process of organization will be largely determined by the facilities available in the different cities, and

Whereas, the city of Detroit, by reason of its wonderful industrial development, seems destined to become the center of aircraft development and production and should encourage such development by establishing suitable landing fields.

Now, therefore, be it resolved, that in order to obtain from the electors an advisory expression on such a proposition, the same be submitted to the electors of the city of Detroit, to be voted on at a special election to be held concurrently with the general election on the 7th day of November, 1922.

We feel now that the people have endorsed our stand on this important question, and we learn, unofficially, that certain property owners who had first objected to the acquiring of fields are willing that the city proceed.

From present indications it appears that a field will now be acquired without much more delay. The site selected has an area of 320 acres and is square in shape.

EDWARD G. HECKEL,
Commissioner of Parks and Boulevards.

Bulletin on the Possibilities of Back-Yard Playgrounds

OAKLAND, CALIF.—Believing that few people have realized the possibilities of home play to supplement the facilities offered by the public playgrounds, the Recreation Department of Oakland has issued a Bulletin on Back-Yard Playgrounds. It contains a suggested layout for a back-yard playground and practical hints as to how to make or where to purchase the necessary equipment.

We are having hundreds of inquiries as a result of the distribution of these pamphlets. A copy will be sent to any reader of THE AMERICAN CITY on application.

JAY B. NASH,
Superintendent, Recreation Department, City of Oakland.

Departments of Education

Seventeen Thousand Richmond Pupils Have School Savings Accounts

RICHMOND, VA.—For the past five years the Richmond public schools have been making a special drive to promote thrift habits among the 25,000 children of the elementary and junior high schools. As a result of this work, some 17,000 of the elementary pupils now have school savings accounts. For a number of years the high schools, both day and night, have had thriving savings clubs administered through their commercial departments.

The system employed in the Richmond schools approximates regular banking practices. Each depositor is given a deposit card, with a duplicate kept in his school. Deposits are made on Monday of each week, and withdrawals are permitted only twice a year—just before Christmas and at the end of each school year.

The system takes about fifteen minutes of the teacher's time once a week, but it is deemed far more educational than the automatic devices used in certain school systems. It is ideal from the standpoint of the cooperating banks, since they do not keep separate accounts with the thousands of depositors. Practically every bank in the city is assigned one or more schools. The banks pay for the material used, at the rate of 3 cents per pupil.

For the year ending June 15, 1922, the total deposits of 16,749 pupils amounted to \$72,770.91. The banks awarded \$1,447.43 in interest, which was given to pupils that had over one dollar to their credit. At the close of the year the pupils left on deposit for the vacation period \$39,503.06.

To stimulate interest in savings, a weekly tabulation is sent out from the Superintendent's office, giving the standing of each school in percentage of pupils depositing and the amount deposited. To illustrate: on Monday, November 27, 1922, a colored school had 100 per cent of depositors, while the highest white school registered 86 per cent. On this date 11,173 children made deposits totaling \$3,613.90. The largest deposit in any single school was \$518.75. The

average deposit made by each pupil on this date was 48 cents in the white schools and 16 cents in the colored schools.

Through this school savings system, which has the cordial support of the business interests of the city as well as of the school patrons, Richmond's coming generation is being taught real thrift. Thousands of children would as soon think of going to school Monday mornings without their school books as to go without a deposit for the school bank.

J. H. BINFORD,

Assistant Superintendent, Richmond Public Schools.

County Officials

Financing Inyo County's Court House

INDEPENDENCE, CALIF.—This remote village of 300 population holds unique distinction as the site of a \$250,000 court house just completed. The unincorporated little town happens to be the seat of Inyo County, the second largest in the Golden State, with an area of 10,156 square miles; hence, when the new capitol was determined upon, it was located here. And this structure, patterned after the White House at Washington and therefore a classic well-nigh faultless in its lines, stands between the two loftiest ranges of the Sierra Nevada Mountains, with Mt. Williamson, 14,384 feet, continental America's fourth highest peak, towering before the main entrance. Thus the pure white steel and concrete building,

with its massive bronze doors and its beautiful columns, has a very excellent setting.

Stranger still about this handsome court house is the fact that it was paid for the moment it was completed, and that without a bond issue! Inyo County, though possessed of but several hundred thousand acres of agricultural land in the fertile Owens Valley, the remainder being mountain and desert, is unmortgaged—without a cent of bonded indebtedness, and the county has a total population of but little over 7,000. It has the fourth lowest tax rate of any California county, pays everything the day it becomes due, and has not in thirty years registered a warrant for lack of funds. And this is the county that contains all of Death Valley! It is larger than Massachusetts, New Hampshire or Maryland.

Revenue from interest on the county's funds was an important aid in paying for the new building. Instead of lending the county's money to the banks at a low rate of interest, the Board of Supervisors has been investing it at the very best rate obtainable consistent with absolute safety. Most of it has been drawing $4\frac{1}{2}$ and $4\frac{3}{4}$ per cent interest on government certificates and other securities, the revenue from this source alone amounting to over \$42,000 in the past two years. When the time came to build the court house, the state paid over a considerable tax reimbursement and the Supervisors were able to supply the remainder of the fund from the treasury, with the addition of a special tax levy of 10 cents per \$100.

GEORGE W. NAYLOR,

Chairman, Board of Supervisors, Inyo County.



INYO COUNTY COURT HOUSE

Fuel Oil Engines versus Steam Engines for Small Municipal Plants

By George T. Prince

Consulting Engineer, Omaha, Nebr.

THERE are a great many cities owning combined electric light and water plants, and the officials of these communities are naturally interested in the subject of whether fuel oil or steam engines are more economical. The plants to be considered are those which supply electric current and pump water for communities of 10,000 population or less. Many villages and small cities using steam power-plants are not able to meet maintenance and operating expenses. In numbers of instances coming under my notice the town is not able to pay the coal bill, to say nothing of fixed charges and labor. Release from this deplorable condition is in many instances being obtained through purchase of current for municipal purposes from transmission lines. I believe that for towns of less than 10,000 population it is inadvisable to install steam-driven power plants.

Comparisons

As a first step, let us consider the thermodynamics of the question. Small power-plants will use from 7 to 8 pounds of coal per kilowatt hour. If it is assumed that the heat value of coal is 10,000 thermal units, 7 pounds will represent 70,000 heat units. One kilowatt hour is equal to 3,393 heat units. It is therefore apparent that a thermal efficiency is obtained represented by the expression $3,393 \div 70,000 = .048$. Compare this result with that obtained from a fuel oil engine. Assuming 0.8 pounds of oil per kilowatt hour and 20,000 heat units per pound of oil, we then have $3,393 \div 16,000 = 0.212$ thermal efficiency, or over four times the steam efficiency. The latent heat of steam is largely responsible for this great loss. In large plants some of this latent energy is recovered, but in small plants such as are now under consideration very little of this 8 per cent loss is recovered.

Simply because steam engines were for

a great many years the sole source of power, they are still installed in many municipal plants. Their installation many years ago was justified when coal was less than one-third its present cost. To-day it is my opinion that it would be far better to discard the small steam plants which have been rendered obsolete by the high prices of coal and take advantage of the economy made possible by the development of fuel oil engines which, as shown, are four times more efficient than the steam engine using 7 pounds of coal per kilowatt hour.

A report has recently been received from the engineer of a water-works plant in a Western city of 25,000 population. This plant was operated by steam prior to 1913, but in that year was changed over to a full-Diesel plant. The engineer states that when steam-operated, the plant consumed from 3,400 to 4,000 pounds of coal per million gallons of water pumped, and current was purchased at $3\frac{1}{2}$ cents per kilowatt hour. The operating expense was as follows:

| | |
|--|---------|
| 3,804 pounds of coal at present prices in bin (\$0.35 per ton) | \$17.78 |
| Estimated cost of lubricating oil..... | .50 |
| Cost of 260 kw. hr. at 3.5 cents..... | 9.10 |
| Total cost per 1,000,000 gallons..... | \$27.38 |
| Present cost using fuel oil..... | 6.93 |
| Saving \$20.45 equal to over 73 per cent | |

The oil engines at this plant had been in continuous use since they were installed, except during periods of overhauling, and they are still considered practically as good as new. Since 1915 this city has installed two 520-horse-power oil engines for electrical purposes.

A city in Texas having a population of approximately 3,500 has in service a Diesel engine installed in 1915. During 1921 this engine operated 8,629 hours (98.47 per cent) at the average costs listed below:

| | |
|--|-------|
| Supplies, maintenance and lubrication..... | .0039 |
| Labor | .0048 |
| Total average cost per kw. hr. for 680,193 kw. hr. generated average output, 10.08 kw. hr. per gallon of fuel oil..... | .0140 |

These figures, of course, do not include interest and depreciation.

An Iowa town of 1,248 population has two Diesel engines which were installed in 1917 and 1920. The operating costs per kilowatt hour for 1921 were as follows:

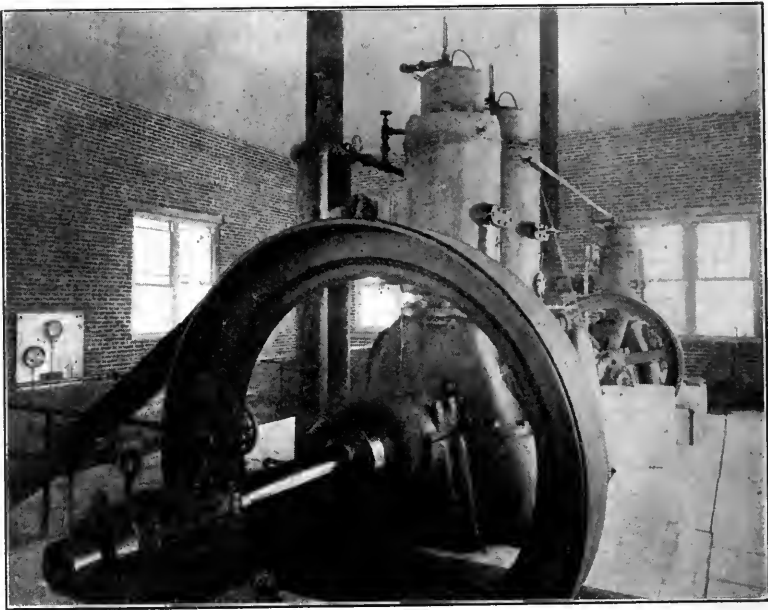
| | |
|-----------------------|-------|
| Fuel oil | .0060 |
| Lubricating oil | .0007 |
| Attendance | .0084 |
| Repairs | .0004 |

Total average cost per kw. hr. for 563,685 kw. hr. generated0155

A Kansas town of about 3,500 population has three Diesel engines in service which

coal operators find it cheaper to buy electric current generated by oil engines it is difficult to understand how towns located at a distance can logically use steam power, having regard to the fact that the average small steam engine develops but 5 per cent thermal efficiency and fuel oil engines develop from 21 to 32 per cent, dependent upon the load and the type of engine.

I recently reported on a water-works property which is used to supply water to a city of 4,000 population. The water is first pumped from wells to a filter plant under



OIL ENGINE INSTALLATION, DOUGLAS, WYO.

were installed in 1915, 1917 and 1920. All expenses, including interest, taxes and depreciation, per kw. hr. for 1921 amounted to \$.0272. The fuel oil alone cost \$.0044.

A particularly interesting case is that of a Kansas town which formerly operated a steam plant. About eleven years ago steam was replaced by oil drive, coal at that time costing \$1.95 in the bin. Later, the city secured contracts with coal mines adjacent to the city limits for furnishing electric power to the mines for operating the machinery. This necessitated the installation of additional oil engines. At that time the cost of coal in the bin was \$3.05 and the cost of oil was 4¼ cents a gallon in tank lots. It is a very significant fact that oil drive is used with which to mine coal. If

a head of about 65 feet and then repumped into the city under a head of 200 feet. The average cost of coal during 1921 was \$6.67 per ton, and the cost for the year was \$2,811. The yearly pumpage was 113,400,000 gallons, which indicates a fuel cost of 2½ cents per 1,000 gallons. In this instance water could have been pumped at a fuel cost of 1.2 per 1,000 gallons.

In a Western town which installed a semi-Diesel pumping plant, water was pumped against a head of 250 feet at a fuel cost of 1 cent per 1,000 gallons, equal to 0.8 cents per kilowatt hour. Many cases have come to my attention in which the financial failure of power-plants has been turned into paying investments by substituting oil engines in place of steam engines.

Small Town Makes Profit from Stone-Crushing Plant

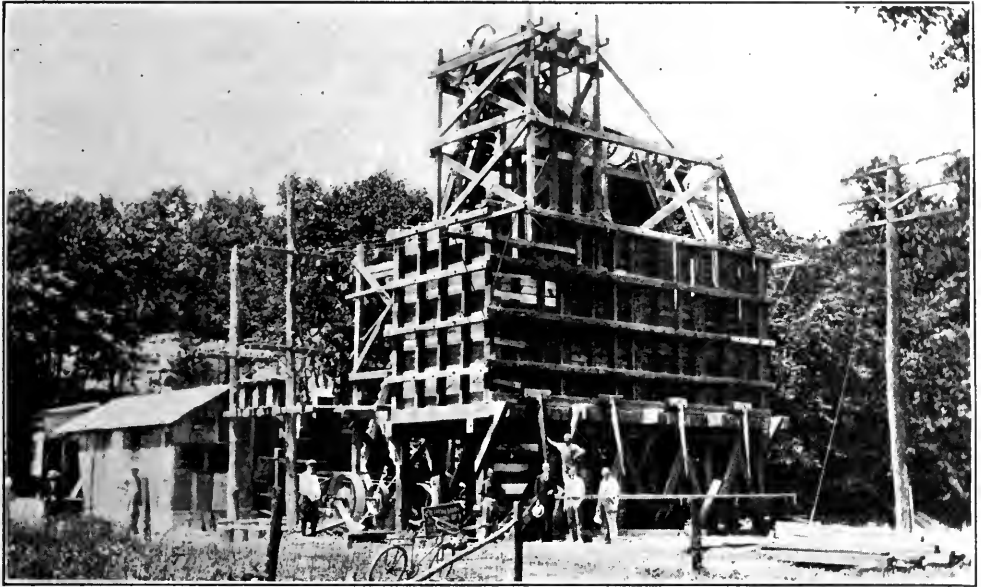
Newton, N. J., Furnishes Crushed Stone for Local Jobs at a Profit

By William J. Hardin

Town Engineer, Newton, N. J.

MANY small towns throughout the country have municipal light and water plants, most of which are run at a profit, but Newton, N. J., is entering into the field with another utility, namely, a municipal stone-crushing plant from which stone for road work is being sold at a profit. It is expected that a profit of about \$10,000 will be realized by the end of the present fiscal year.

Rock is delivered to the crushing platform on low quarry cars, the loading platforms of which are 24 inches above the rail. All stone is loaded by hand. The loaded cars are hauled up a short 4 per cent grade by means of a friction hoist run by a belt from the jack-shaft, and the empty cars return to the quarry by gravity. The motor-driven No. 4 and No. 6 Champion crushers are equipped with elevators and screens. Air



A WELL-EQUIPPED ROCK CRUSHER OWNED BY NEWTON, N. J.

The plant, which is located on the Newton-Andover road, was completed recently at a cost of \$21,000, including the price of the land and quarries. About 2,000 tons of crushed stone was put out in the first two weeks of operation. Stone is being turned out at 98 cents a ton; this takes into consideration interest on the investment, depreciation, repairs, electricity and other operating costs.

for drilling is furnished by an Ingersoll-Rand compressor.

The town has agreed to sell the run of the crusher to Sussex County, N. J., for \$1.60 a ton, and the county expects to be able to absorb the excess output of the plant. This will net about \$9,000 profit if the plant puts out 15,000 tons this year. A higher price can be obtained for special grades of stone supplied to contractors,

which will run the profits up to about \$10,000. As a matter of fact, this profit will not show in an actual money balance, since some of the stone crushed is going into improvements for the town.

For several years the Town Committee had realized that the town needed a new crusher. The one previously used was smaller, poorly located and expensive to operate. It was run by steam and cost about \$2.50 a ton for operation, or more than 2½ times as much as the present plant.

There is a 5-acre ledge of blue limestone located adjacent to the crusher which has

been passed upon as particularly good for road work. The town has orders for 6,000 tons of stone this year to be used by the Public Service Production Company in the concreting of High Street, Newton, one of the main thoroughfares of the town.

As an adjunct to the plant, 25-ton scales will be installed in or near the plant at a cost of about \$1,400, of which Sussex County will probably pay half. The scales ought to pay for themselves by leading to the punishment of truck owners who overload. Members of the state police recently deplored the lack of public scales on which large loads can be weighed.

Maintaining the Efficiency of a Volunteer Fire Department

By J. W. Stroh

Chief, Volunteer Fire Department, Sunbury, Pa.

THE Pennsylvania State Board of Underwriters has made a ruling that a city maintaining a paid fire department shall have a credit of 7 per cent in efficiency in the Underwriters rating. This, of course, is a handicap against the volunteer fire department. The ruling was made because of the constant service rendered by the paid firemen, night and day, whereas in the volunteer department the men respond only when called by a public alarm. In 1920 and 1921 the Sunbury, Pa., Fire Department was rated as being 7 per cent deficient, or, in other words, if it had been a paid department it would have had a perfect score.

Sunbury has only recently been incorporated as a third class city, having received its city charter on January 1, 1922. There are now 18,000 inhabitants in the city and there are eight volunteer fire companies in the Department. The Fire Department equipment consists of two motor pumpers and hose trucks with chemical extinguishers, four motor hose trucks with chemicals, two American-LaFrance steamers, one aerial hook and ladder and chemical truck with water-tower, and one horse-drawn hose-wagon. The Department has about 15,000 feet of hose, with the necessary

shut-off nozzles, cellar nozzles, ladders, door-bars and, in fact, all the smaller accessories that go with a well-equipped department.

The personnel of the department is a very well-organized and representative body. Each company sends three members to a general assembly which meets monthly to make laws and transact business that will produce the best service for the city and the department. From among the members of the various companies are taken the following officers to serve for one year or until their successors are elected: a president; a vice-president; a secretary; an assistant secretary and treasurer; a chief engineer and three assistants. There is also a fire police department consisting of 24 men who serve without pay at all fires. These fire police have been the means of bringing about such a radical change in increasing the protection of property and keeping the general public from encroaching upon the space needed for the use of the fire fighters and in the saving of personal property after it has been taken from burning buildings that to do away with their services would be like losing half the department.

The city is equipped with a Gamewell fire alarm system, which gives excellent

satisfaction and service. There are eight fire houses worth about \$150,000, owned by the companies and free from debt. The apparatus is all owned by the various companies and has been purchased by popular subscription, except one steam engine and the hose, which are owned by the city. There are more than 1,000 men enrolled in the 8 companies, these men coming from all walks of life, including ministers, lawyers, judges, professors, doctors, merchants, mechanics and laborers.

Service Rendered

According to the Underwriters statement there was more than \$12,000,000 worth of insurance written in Sunbury in 1921 at a premium cost of \$65,000. Because of the efficient service rendered by the volunteer fire department in 1921, there was a reduction of 10 per cent in premiums, or a saving of \$6,500 to the city. The department has also been the means of effecting a considerable saving for the suburban village of Hamilton through an agreement with it for fire protection. The premiums in the village have been reduced from \$1 per \$100 to 65 cents per \$100, and additional reductions will probably be made.

The city spent \$7,200 in maintaining the Sunbury Fire Department last year; and since the Department saved the citizens \$6,500 in insurance money, this makes a net cost of \$700 for the operation of the entire department for the year. This, of course,

does not take into account the saving from actual loss by fire. For instance, there was a very threatening fire in the Masonic Temple that, if it had not been for the prompt service rendered by the Department, would have resulted in a total loss of about \$75,000.

Discipline

While there seems to be a justifiable pride in the present efficiency of the department, there was a time when the department was not nearly as efficient nor as effective. This was due to a lack of systematic organization. Each company was a law unto itself, and lawlessness and bitter factional fighting prevailed, resulting in a loss of a great deal of property and little advancement in the way of systematic fire fighting. Some of the members of the department decided that the time had come for a sane, effective organization of all the forces, and this was accomplished after many stirring crashes among the companies.

To-day Sunbury enjoys the services of a complete democratic volunteer fire organization. The men feel it an obligation to give to the city in which they live as loyal service as is in their power, and they pride themselves on serving their neighbors as they would themselves. After all, this sentiment is the one large factor that will carry any department forward to success, and is the one which has made the Sunbury Fire Department a fine example of what volunteer fire departments should be.

The Cost of Fire Fighting in New York Cities

THE cost of fire fighting in the cities of New York State is practically the same for 1922 that it was for 1921, according to a recent report of the Mayor's Conference Bureau of Municipal Information. This is the first time in many years that there has not been a substantial increase. In 1916 the 59 cities appropriated \$13,100,983.49 for fire-fighting purposes. This increased 83 per cent during the next five years, so that in 1921 the total appropriation amounted to \$24,010,109.31, which is practically the sum the cities spent in 1922.

Reports received from all cities in the state show conclusively that the cost of fire fighting has reached its peak and is actually

beginning to fall. Twenty-nine cities report that their fire department appropriations are less for 1922 than they were for 1921. This decrease ranges from 2 to 36 per cent. In five other cities the appropriations were the same for both years. Seventeen cities reported increases greater than 5 per cent in their 1922 appropriations. The purchase of motor apparatus to replace horse-drawn apparatus, which will eventually reduce expenses, is responsible for the increase in six of these cities. Increase in fire-fighting forces is the next important cause for greater expenditures this year. Only three cities report that their fire departments are costing more this year because of increase in salaries.

Street Lighting with Mazda Lamps

By R. E. Greiner
Street Lighting Specialist

THE chief function of street lighting was originally the prevention of crime. Throughout the eighteenth century it was worth a person's life to travel the streets of any large city without a bodyguard. Even during the last generation there have been certain sections in many American cities dangerous to traverse after nightfall. Good street lighting has practically done away with this undesirable condition; so generally, in fact, that one is liable to forget the fundamental purpose of street lighting.

It is interesting to note that after a high-intensity "White Way" system of lighting was installed on the main business streets of Cleveland, a decrease of 8 per cent was observed† in the number of crimes taking place, while on the more poorly lighted streets there was an increase of 57 per cent. Obviously, street lighting is still a very important and necessary factor in crime prevention.

While later requirements may, in one sense, be considered as secondary to that of crime prevention, they have actually demanded much higher levels of illumination.

Another reason for street lighting which has always been more or less apparent, even in the early practise, is the facilitation of traffic. With the rapidly increasing amount of high-speed automobile traffic, good illumination becomes more and more essential, not only on city streets, but likewise on suburban highways, where street lighting was not formerly economically practical. From an observation* extended over about thirty of our principal cities, it is shown that out of 10,640 killed in traffic accidents in 1920, 3,223 deaths occurred in night accidents, 17.6 per cent, or 567, of which could be attributed to lack of sufficient illumination. Dr. Crum, statistician of the Prudential Insurance Company, states** the annual street accident loss to be fully one billion

dollars, and he further estimates that fifty-four million dollars of this loss is caused by lack of light. In contrast to this, it is startling to note that the total amount spent annually for street lighting in the United States, according to census reports, is not in excess of fifty million dollars. In view of these facts, a far greater amount could well be invested in additional street lighting and yield a splendid return in the reduction of the accident loss which now prevails.

It has been definitely proved that lighting by modern methods actually does reduce crime and prevent accidents; that unfortunately these systems are employed to a relatively small extent, and that it is economically desirable to extend such lighting for both congested areas and highways as rapidly as possible.

A third function of street lighting which is of recent origin and which demands an even greater amount of illumination than is required to prevent crime and accident, is the advertising or attracting power of the so-called "White Way" system of illumination. High-intensity street lighting of this nature has sprung from small beginnings. At the outset such ornamental lighting consisted of temporary installations for gala occasions. These were found to be so successful from an advertising standpoint in stimulating activity in the business section and generally increasing the attractiveness of the cities, that permanent White Way installations are now demanded for the more important sections of both large and small cities.

Principal Business Sections

As the commercial life of a community is centered in its retail business district, the illumination here should be of the highest order, which has given rise to the so-called White Way lighting. The installation should be such that it will provide:

1. A high intensity of illumination to attract the crowd, to increase business, and to prevent accidents from the dense traffic.
2. Quality with regard to color, diffusion

† "Statistics on Street Lighting and Crime in Cleveland," by Ward Harrison, Trans. I.E.S., Vol. 16, page 463.

* "Illumination and Traffic Accidents," by E. A. Anderson and O. F. Haas, Trans. I. E. S., Vol. XVI. No. 8.

** F. S. Crum paper, "Automobile Fatalities."

of light and freedom from glare.

3. A distribution so controlled as to give sufficient illumination on the street surface and at the same time allowing enough light to strike the building fronts and make visible the architectural details.

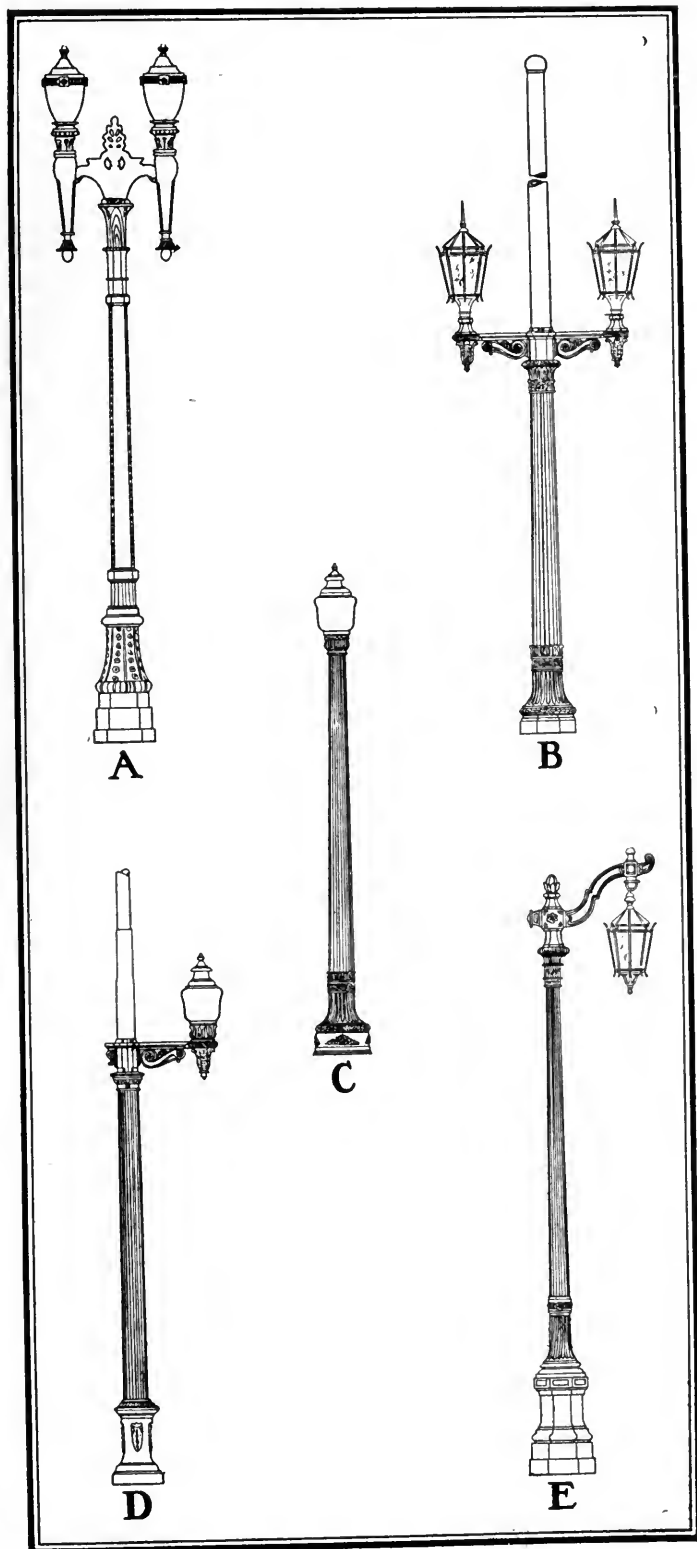
4. Units of such a character as to present an attractive appearance both by day and by night and to harmonize with the character of the building and carry out the traditions of the community.

A distinctive characteristic of White Way lighting is that more illumination is demanded between street intersections than on the corners themselves, whereas in all other classes of street lighting the maximum is required where the lines of traffic cross. The reason for this is that the publicity and decorative functions call for more light than would be required for reasonably safe travel.

White Way lighting for the business section demands the use of the ornamental types of fixtures. These units are provided with diffusing glass globes of various designs surrounding the light source to break up the light given out by the bare lamps. In this way glare which would otherwise be present is eliminated. The entire globe becomes the apparent source of light and

METHODS OF MOUNTING WHITE WAY LUMINARIES

(A) Specially designed two-light standard with ornamental globes. (B) Trolley pole twin bracket type with ornamental lantern type lights. (C) Ornamental standard for single light. (D) Single-light ornamental bracket for trolley-pole mounting. (E) Ornamental mast-arm mounting



because of its comparatively low brightness makes for greater eye comfort both for pedestrians and vehicular traffic and helps beautify the streets. Such units ordinarily do not materially change the distribution of light given by the lamp itself, hence this type of lighting, while allowing plenty of light on the street surface, sends illumination to the structures which are along the street, and causes them to stand out. Thus the street appears to be more luminous than if the light was sent to the street surface only.

This diffusing glassware may be obtained in several varieties. The opalescent and the rippled glassware are the most widely used. The opal glass affords a uniform brightness over the entire globe, while the rippled glass, by its slight refracting properties, gives a certain sparkle or animation to the illumination and at the same time permits a greater or less control of the distribution to meet particular conditions.

Single units are recommended because of the higher efficiency which is obtained with one large lamp rather than a group of small lamps. In the large cities, however, it is often desirable to install two or more such units on one standard to make an intensive or super-White Way. These can be mounted as illustrated. The picture also shows schemes for mounting single units.

The most attractive method of mounting the lighting units is to employ ornamental pedestals. These can be obtained in a number of beautiful designs and often are so made as to incorporate some local tradition or history. The somewhat more economical method of using the trolley poles to support ornamental bracket fixtures, is, however, occasionally required by local conditions, and has the further advantage of obviating a multiplicity of poles. The wiring, wherever economically practicable, should be underground, doing away with the unsightly overhead system.

SIZE AND SPACING OF LAMPS FOR PRINCIPAL BUSINESS SECTIONS

| Approx. Size of City | Size of Lamp— Lumens | C.P. | Mounting | |
|-------------------------|-------------------------|----------|----------------|-----------------|
| | | | Height Feet | Spacing Feet |
| Up to 15,000..... | 6,000 | 600 | 14 | 60-80 |
| 15,000 to 250,000. | 10,000 | 1,000 | 18 | 80-100 |
| 250,000 up..... | 15,000 | 1,500 | 18 to 22 | 100-125 |
| | 25,000 | 2,500 | 22 to 25 | 100-150 |
| | 10,000 | *2-1,000 | 15 to 22 | 100-150 |

*2 light standard.

Lamps below the 6,000-lumen rating are recommended only in the smaller cities

where the higher intensity of light is not practicable.

The actual spacing of units is governed by a number of considerations. An even distribution of light upon the street surface would be desirable, but it has been found that the advantages gained by having this even intensity are not enough to offset the added cost of the lighting equipment necessary to produce it. Good practise in planning a street lighting system is to have the ratio between the maximum intensity and the minimum intensity not greater than 15 to 1, the economic limit being about 3-1. Any ratio between these two limits is considered relatively uniform lighting, a high standard of uniformity being a ratio of 5 to 1.

Another factor which must be taken into consideration is the width of the street. In lighting streets of ordinary width it is common practise to utilize a row of lighting units on either side of the street. This arrangement gives a proper distribution of light and a desirable uniformity of appearance. The units are mounted either opposite or staggered. The staggered system is not as satisfactory as the opposite type for very wide streets, but gives very good results on streets not wide enough to warrant installing units opposite or not narrow enough to use simply one row. The appearance of uniformity is in this way maintained, and there is a much more effective distribution of light, which offsets the added cost of installation.

Again, the spacing may be affected by local conditions, such as length of the blocks, location of trolley poles and the like. It is also important to note that for a given spacing the cost of street lighting does not usually increase nearly so fast as the size of units. Not only are the larger lamps more efficient, but the overhead costs almost invariably become a relatively smaller factor for the larger lamps.

Secondary Business Sections

This classification includes the less important business streets adjacent to the main business street, and those smaller business centers which spring up in semi-suburban districts of all cities.

On these streets, it is obvious, the intensity of illumination will be somewhat lower than on the principal business section.

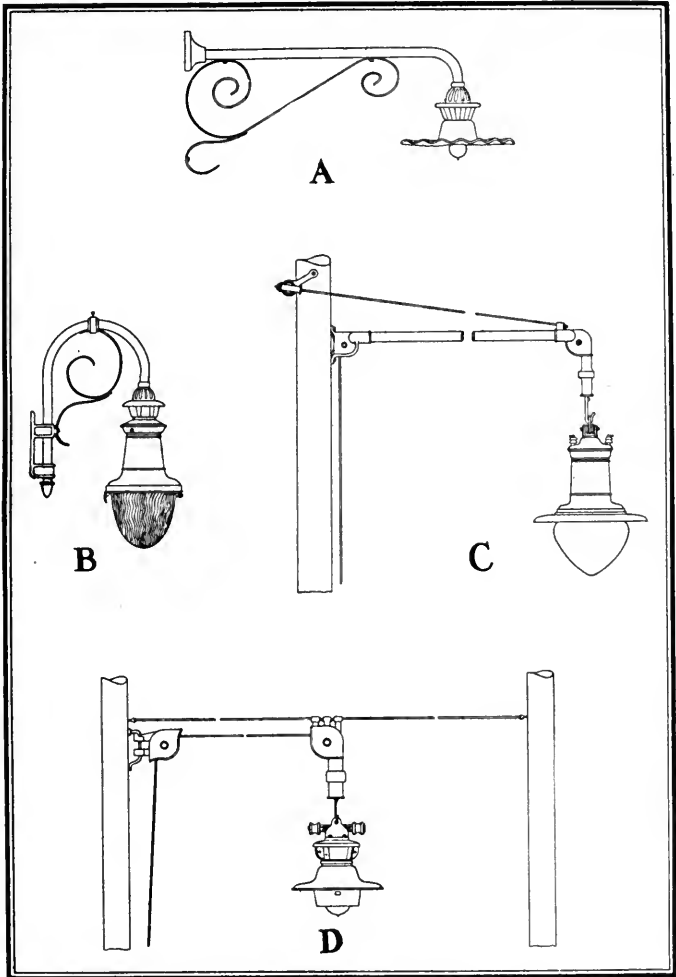
It should, however, be of a comparatively high standard.

There is not the same demand for the publicity element, and traffic is not likely to be so heavy on this class of street, making a slight decrease in illumination possible without increasing the number of accidents. There will still be provided ample illumination for the prevention of crime.

In general, the ornamental system should be continued to preserve the uniformity of appearance. It is, however, sometimes necessary to allow a somewhat wider spacing or a smaller lamp, or to use a more economical method of lighting. In this case, a pendant type unit with diffusing globe would be recommended. Refracting equipment is generally desirable with either type of luminaire, especially if the spacing is fairly wide.

On account of the development of refracting equipment, the distribution of light from street lighting luminaries can be quite accurately controlled to give the maximum candle-power at any desired angle. This is ordinarily 10 to 15 degrees below the horizontal. The directional effect is secured by means of a prismatic glass refractor, the prisms being so designed as to direct in the desired direction the light given off by the lamp.

The buildings lining the secondary streets are not so high as along the main business section, with the streets somewhat narrower. In mounting the units, if the ornamental type is used, the same style standards are employed as on the main business street, with a wider spacing or a somewhat lower mounting height and a smaller lamp. In the case of the pendant type unit, it is mounted on a mast arm and swung out over



METHOD OF MOUNTING PENDANT UNITS

(A) Bracket type suspension with porcelain enameled steel radial wave reflectors. (B) Bishop's crook bracket with pendant unit. (C) Mast-arm suspension with pendant luminaire and lowering device. (D) Center-span type suspension with lowering device

the street or on the so-called "Bishop's Crook" bracket, as illustrated.

SIZE AND SPACING OF LAMPS FOR SECONDARY BUSINESS SECTIONS

| | Size of Lamp | | Spacing Feet | Mounting Height Feet |
|---------------|--------------|---------|-----------------|----------------------------|
| | Lumen | C.P. | | |
| Ornamental... | 4,000-6,000 | 400-600 | 100-125 | 13-18 |
| Pendant..... | 4,000-6,000 | 400-600 | 100-125 | 15-20 |

Main Thoroughfares

These comprise main routes through the city and are therefore subjected to a heavy flow of high-speed traffic. In this case a high intensity of illumination is needed to insure safety. As much light as is actually provided on the streets in the main business section is desirable. However, here the

buildings need not be as well illuminated and the same illumination on the street itself can be obtained at a lower cost by directing the light so that it is used more effectively, rather than by using the diffused system, which lights up the surroundings. Some sort of refracting equipment is essential to accomplish this end.

When these thoroughfares traverse the better residential sections, a neat and attractive unit is necessary and an ornamental system is desirable. As mentioned above, the prismatic refractor is invaluable in this type of lighting, permitting a wider spacing of units and economical operation.

In choosing a unit for this character of street, careful consideration must be given to the distribution of light which it affords. It must direct the illumination to the street surface, as this class of thoroughfare is lined for the most part with residences set back from the street, and comparatively little illumination should be sent to the buildings.

Economical considerations will govern the choice of the equipment. Pendant or mounted types as used on the business streets, equipped with refractors, are desirable. Effective installations, though not of the same artistic standard, can be obtained through using the pendant luminaires, such as shown for secondary streets.

Here little or no reflection is obtained, so that to secure the proper distribution and protect the eye from the light source viewed against the dark background, a higher mounting should be used. Frequently, forestation is encountered which necessitates placing the lighting units on some form of mast arm which carries them over the street clear of foliage.

Units should be arranged along one side of the street except where the thoroughfare is of exceptional width, when each side should be provided with a row of units. These may be placed either opposite or staggered.

SIZE AND SPACING OF LAMPS FOR MAIN THOROUGHFARES

| | Size of Lamps | | Spac'g Feet | Height Feet |
|-------------|--------------------|---------------|----------------|----------------|
| | Lumens | C.P. | | |
| Pendant: | 4,000-6,000-10,000 | 400-600-1,000 | 100-200 | 15-20 |
| Ornamental: | 4,000-6,000-10,000 | 400-600-1,000 | 100-150 | 15-20 |

Illuminating Residence Streets

The requirements of residential street lighting vary considerably. The main con-

sideration in this section is to provide illumination of sufficient intensity to discourage criminal activities. Vehicular traffic in this area is of secondary thought because of its sparseness. Sufficient light should be furnished, however, to enable passers-by on the street to recognize each other conveniently. To obtain these results, the light must be fairly uniformly distributed and free from dense shadows.

In general, pendant type fixtures are used for residence street lighting, although it would be equally desirable to use an ornamental type fixture. By the use of refracting equipment with the various types of units, the streets can be illuminated quite well with wide spacings, except where dense foliage prevails.

As pointed out in the next section, local conditions often make necessary the use of small lamps; these are well served when using a type of equipment known as a "radial wave" reflector. This is either of porcelain-enameled steel or of pressed porcelain with fluting. Its flat contour directs light at a wide angle, although it does not control the distribution to the same degree as a refractor.

Ordinarily, a residential street has along either side a row of trees, which makes it a hard problem to get illumination upon the street surface as uniformly as desired, because of the dense foliage. It is a common practise to mount rather large lighting units of the type pictured in the second illustration at the street intersections, light from these units being sent in each direction down the intersecting streets. This gives the most light at the street corners, where there would be more likelihood of traffic accidents. Extremely long blocks, however, cannot be lighted simply by having one light at each corner, as this would leave the central part of the block almost in total darkness, even though refractors were used to widen the distribution of light. To overcome these difficulties, one or two units should be placed along the street between intersections, so mounted as to eliminate interference by foliage. On the older residential streets the trees are for the most part of considerable size, usually trimmed quite high, allowing lighting units to be placed below the branches. Thus practically no useful illumination is lost in the foliage. On the newer streets, the trees are apt to be quite young, with the branches starting

seven or eight feet from the ground. Here much trouble occurs because the units come among the branches. This results in a serious absorption of the light by the foliage. To overcome this, the lamps must be mounted on mast arms and swung out beyond the trees to clear the branches, or smaller units mounted at a lower height more closely spaced can be utilized.

Most cities have realized that by allowing the forestation along the street to reach such a magnitude that it seriously affects the illumination they are not getting the proper lighting of their streets, and they have therefore passed ordinances compelling residents along the street to trim their trees up to a certain height. Other cities have gone a step further and have hired competent men to take care of this work under the park department.

Considerable care must be taken in residential street lighting so as not to place the lighting units where objectionable light will be thrown onto the houses. A great deal of trouble has been experienced in this way, causing considerable expense in changing units from one position to another. Little annoyance will be caused, however, if the light is so distributed as to allow no illumination to strike higher than the first story of the residences.

SIZE AND SPACING OF LAMPS ON RESIDENCE STREETS

| Size of Lamp | | Spacing Feet | Mt. Ht. Feet |
|--------------------------------|-------------|-----------------|-----------------|
| Lumens | C.P. | | |
| Pendant (at corners): | | | |
| 2,500-4,000-6,000 | 250-400-600 | 200-350 | 15-20 |
| Pendant (more closely spaced): | | | |
| 1,000-2,500 | 100-250 | 100-200 | 10-18 |
| Ornamental: | | | |
| 1,000-2,500-4,000 | 100-250-400 | 100-250 | 10-16 |

(Concluded in the February issue of THE AMERICAN CITY)

School Sanitation

THERE is probably no country in the world that exceeds the United States in the appreciation of the value of public school education. The public school in the United States stands as a glorious monument to the intelligence of the American people. The appropriations for public school education in every American community represents a large percentage of the total municipal and county budget, and the cities particularly have made remarkable progress in providing modern and attractive school buildings. Although the rural school has lagged behind the city school in size, desirability and attractiveness, it is providing for the health, comfort and convenience of the children, and in providing for the health, comfort and convenience of its children there is much evidence that this difference is gradually being overcome. This is particularly true in Indiana, where the consolidated rural schools are not only large and attractive structures but are provided with modern toilet facilities, bubbling fountains, light, airy rooms, gymnasias and other desirable features. Each of these schools makes provision for instruction in domestic science and manual training, and in many cases there are special classes in agriculture. In the Dayton School, located in Tippecanoe County, Indiana, a course in printing is also offered.

Some of these schools provide showers in connection with the gymnasias, and each has a large auditorium that is used as a

community hall. In some of these assembly halls facilities for showing moving pictures or for staging plays are available, thus making the farmer more or less independent of the city for his recreation and entertainment. The consolidated rural schools are also provided with some form of artificial light, sometimes through current obtained from a private plant and in other cases the result of burning acetylene, gasoline, illuminating gas or kerosene.

Progress in the construction of school buildings came with the realization that when the child went to school, the mind was accompanied by the physical body, and that in order to function at its best, the mind was dependent on the condition affecting the body. It has also been realized that the mind of the school child was most impressionable at that age, and that much could be done to inculcate proper habits of cleanliness, thought and behavior. A child living in the midst of a desirable environment for at least five hours every day necessarily takes back to his home certain ideas which improve the existing conditions there. It is because the school can always stand as a splendid illustration of all that is good in thought, behavior and sanitation that every effort should be made not only to maintain the schools at their present desirable levels, but to keep improving conditions continually as new ideas develop.

From a Public Health Survey of Lafayette, Ind., and Tippecanoe County, Ind.

Essay Contest Promotes Better Citizenship

By John G. Stutz

Secretary, League of Kansas Municipalities

THE one outstanding problem for the city official to-day, is to secure the proper support from local citizens. School authorities in Kansas have cooperated to the extent of developing an interest on the part of high-school students in the study of better forms of government.

The League of Kansas Municipalities, which was organized for the purpose of promoting the study of municipal problems and fostering better municipal government, is endeavoring to stimulate an even greater interest among students in city government and citizenship, by conducting four essay contests each year. All Kansas high-school students who are carrying satisfactory and regular work in an accredited school are eligible for these contests. Students in large and small cities are given equal opportunities.

The subjects chosen for the four contests are as follows: My Home Town; Fire Prevention; Duties of the Mayor; and Civic Duties of a High School Student. Essays in the first contest were received and judged in the week of October 10. The second essay was due on December 10, and the two remaining ones on February 10 and April 10, respectively. Fifty dollars in cash prizes is offered for each of the contests, divided as follows—\$25 for first prize and \$12.50, \$7.50 and \$5.00 for second, third and fourth places, respectively. The first and second prize essays in each contest are published in *Kansas Municipalities*, the official magazine of the League, accompanied by a picture of the winner.

Great Interest Shown in First Contest

There were 108 essays from 37 cities entered in the first contest on the subject, "My Home Town." Dudley Whiteside, of Fort Scott, won first prize, and Gwendolyn Miller, of Dodge City, second. Velma Dixon, of Kincaid, took third honors, and Ruth Shepherd, of Abilene, fourth. The scope of the subject included the historical background of the city, geographical loca-

tion, public improvements, and the advantages offered by the city to young people. The essays contained between 1,500 and 2,000 words each, and were graded according to news value, style and composition, with emphasis on news value. Each essay bore the approval of a city official and was accompanied by a statement as to the scholastic standing of the student.

The city officials of Kansas have taken an active interest in the contests. In two cities prizes were offered for the best local essays. Marysville is stimulating interest by a local prize in each of the four contests; the City Council, the Fire Department, the High School faculty, and the Chamber of Commerce will contribute \$10 each. The October contest resulted in 200 essays, of which eight were sent to the League contest by the local judges.

Results Are in Evidence

The interest has not abated with the close of the contest. The desired permanent effects are beginning to appear. The students in Valley Falls High School have organized a junior city. The students of the civics class in Lawrence are visiting the commission meetings in order that they may learn how ordinances are passed. The students in Parkerville are promoting a community hall; and other high schools are studying methods for acquiring better sidewalks and cleaner streets. These are only a few examples of the new spirit which has developed. The Municipal Reference Library maintained at the headquarters of the League has been called on by high school students to furnish information on municipal subjects, many times more frequently than was the case before the contests were announced.

The quality and amount of the information given, and the literary style displayed by students in their essays, have aroused admiration on the part of League officials and city officers. As stated previously, it was a known fact that there had been some

interest in city government, but its extent was underestimated. There is good reason to believe that municipal problems in the years to come will be handled with more

understanding and enthusiasm than has characterized recent years. And the schools will become practical instruments of good government and civic welfare.

The Hospital's Place in the Small City

A Plea for Community Hospitals to Serve as Centers of Health Activity and Preventive Medicine

By Joseph J. Weber

Managing Editor, *The Modern Hospital*

“GET him out of the city.” Ten years ago that was the doctor's unfailing prescription to the pallid product of the city streets.

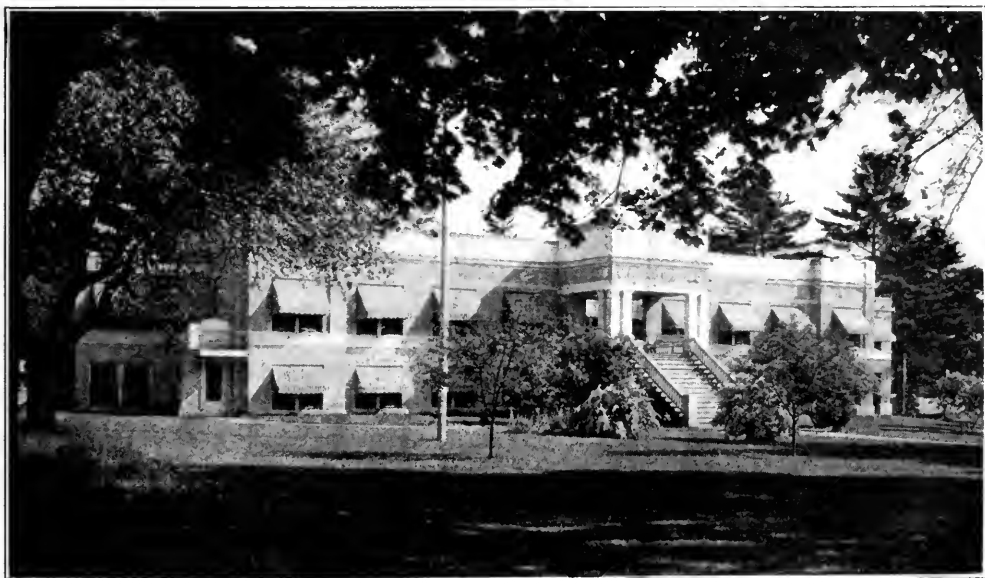
And so the city boy's white shirts and dotted neckties were packed and he was hurried off to his grandmother's in the small town or country to be the envy and scorn of an overalled, barefooted, robust group of country cousins.

But what now?

Statistics show a reversal of positions. Recent surveys, in the states of New York and Iowa at least, reveal that it is the city boy who now enjoys the heritage of health,

while often the boy of the smaller city or the country is the weakling. Sanitation, healthful sports, medical inspection in the schools, vigilance against bad teeth, prompt removal of adenoids and diseased tonsils—these are things that are making metropolitan centers safe for childhood. Water is pure; milk is inspected; defective plumbing is discovered and remedied; parks invite healthful play. The city boy, except in the meanest and most congested areas, has health within his grasp.

How to extend these attributes of health to the small town is an important question. Many medical men and public health and



EGELAND HOSPITAL, STURGEON BAY, WIS.

social workers are beginning to see its solution in hospitals—community hospitals. These institutions would serve their towns and the surrounding rural districts not simply in the emergency of sickness, but as centers of health activity and preventive medicine. They would be clearing-houses for all health agencies, schools of personal and public hygiene, motion picture theaters for health education, regulators of family diets, counselors in community health problems.

Further, these community hospitals would be the savior of the country doctor, that essential but fast-disappearing guardian of family health. Of this fact, Dr. S. S. Goldwater, former Commissioner of Health of the city of New York and now superintendent of Mount Sinai Hospital, one of the largest and most progressive institutions for the care of the sick in that city, is convinced.

"The country practitioner is fast nearing extinction," Dr. Goldwater has declared. "The exodus of the physician from our smaller cities and rural communities is yearly becoming accelerated, and already vast areas of our country are lacking the medical attention of a single physician. Although our schools of medicine are turning out hundreds of splendidly trained young doctors, it is not as country practitioners. These men refuse to go to communities where there are no hospital facilities to provide scientific care for their patients and to enable them to rise in their profession. And because the family doctor is dying out, the health of rural communities is jeopardized."

Some statistics have recently been compiled which show the lack of hospitalization outside of metropolitan centers.

More Than Half the Counties Have No Hospital

Fifty-six per cent of all the counties in the United States have not a single hospital. Many of these counties are purely rural, but others include numerous towns and cities of appreciable size. This startling figure would be augmented to include 330 additional counties, if one were to disregard small private hospitals of less than 25 beds, many of which give the most meager and often unscientific care to the sick. There are only two states in the Union, Connecticut and New Hampshire, which have a hospital in every county.

The situation in regard to hospital facilities is most alarming in the South-Central group of states, where there exists but one hospital bed for every 705 persons. In the state of Mississippi, where large industrial centers are few and the population is chiefly small-town and rural, there is only one bed to every 1,054 persons.

The ideal ratio between population and hospital beds is generally estimated at one bed to every 200 persons. In the large cities, even this ratio is frequently exceeded. The city of Omaha, for example, has a hospital bed for every 107 persons, and 70 per cent of these beds are continuously occupied. Hartford, Conn., has one hospital bed for every 110 persons, with 81 per cent continually in use; St. Paul has one to every 111; Baltimore, one to every 112; Richmond, one to every 114; and Boston, one to every 127. Chicago has one bed to every 214 persons; and New York, one to every 293.

Thus it can be seen that from the standpoint of hospital facilities, the larger cities are much more adequately supplied than the smaller towns. This is the more striking a contrast when it is remembered that sparsely settled districts make essential a larger number of hospitals than otherwise would be needed.

One current effort to relieve this situation is the prize architectural competition being conducted by *The Modern Hospital* for the best set of plans of a general hospital of from 30 to 40 beds. In announcing this competition, in which some of the leading architectural firms of the country are participating, the purpose was stated to be the stimulation of small hospital construction which is at the same time efficient in arrangement, creditable in architecture and in every way capable of functioning as a health center. It is expected that the jury will make its awards in February, and that the prize plans will be published shortly thereafter.

If smaller cities are to follow the pace in disease control and preventive medicine set by the larger centers, they must extend public health education, get behind movements for increasing health facilities, hold out sufficient inducements to family practitioners to retain their services, and recognize the place the hospital is coming to hold in the elevation of the health standards of the community.

A New Activated Sludge Sewage Disposal Plant in California

Plant Now Under Construction for Pasadena, South Pasadena, Alhambra, and San Marino

By **C. W. Koiner**
City Manager, Pasadena, Calif.

THE city of Pasadena has been disposing of its sewage for a number of years through the use of septic tanks and by using the effluent for irrigating a 517-acre ranch. This system of disposal has become unsatisfactory, as the population in the vicinity of the farm has in-

by voting bonds for the construction of the required plant.

The present flow of sewage is approximately 2.75 million gallons per day from an area of 7,860 acres. Approximately 3,000 acres is about to be added. This will raise the estimated amount of sewage to be



PASADENA ORANGE GROVE IRRIGATED BY SEWAGE PLANT EFFLUENT

Water can be seen in irrigation ditches in the distance

creased to a point where it is necessary to adopt the latest and most scientific method of sewage disposal. After considering all the various methods, Pasadena, Alhambra and South Pasadena have decided to build an activated sludge plant. This is being done after the operation of an experimental plant for some time. In view of the success attained by others and, further, in view of the fact that sludge can be used as a fertilizer very readily in this section of the country, it is the one method that appealed to the authorities, and the people responded

treated at the start to 3.5 million gallons per day. It is assumed that the increase of population and new territory will increase the volume of sewage in ten years to six million gallons per day. The plant is designed to treat that amount of sewage.

Screening and Aeration

The sewage will first be passed through a coarse bar screen, to guard against the entrance of coarser materials. These will be raked off the bars and buried. The finer screens will then remove the finer solids,

which will be passed direct to the dewatering plant, where they will be sterilized by sulphur dioxide gas and sent to the press. After passing the screen, the influent will be carried by a V-shaped channel along the ends of the aerating tanks. Gates will be placed along the side of the channel, extending to the bottom and connecting to each aerating tank. The aerating tanks, which will be 18 in number, are 50 feet long, 9 feet wide and 15 feet deep below the surface of the liquids. Each tank is to be supplied with sixty 12- by 12-inch filtros plates, set in cast iron plate holders. Each holder will be supplied with air through a 1-inch galvanized pipe attached to feeder pipes above by couplers and service cocks. The plate holders will be hot-dipped in asphaltum to prevent rust. The plates will rest on felt gaskets with ozite or asphaltum poured around the edges and will be held in place by iron rims bolted to the plate holder by brass bolts. It has been found that plate holders treated in this manner will resist rust for a long period and, furthermore, that this arrangement provides for the removal and replacement of any defective plate without interrupting the action of the tank. A plate can easily be taken out of the holder by removing the nut and warming the holder.

Between plates on the bottom of the tank, concrete pyramids will be constructed so that there will be no places where solids might collect and become septic. It has been found that one cubic foot of air per gallon of sewage treated and four hours' aeration will produce a satisfactory effluent with Pasadena's sewage.

Sedimentation

The tanks are so arranged that they may be used in series or in parallel, and by the use of spare tanks a great range of treatment is possible. From the aerating tanks the sewage will pass to a V-trough and be conducted to any of the 18 sedimentation tanks. Each sedimentation tank will be 22 feet long, 9 feet wide at the top, and 27 feet deep below the surface of the water in the middle. The sides, where not vertical, slope at a 60-degree angle to form a hopper bottom, terminating in a 4-inch discharge pipe. Along the entire length of each side will be a weir and a V-trough to receive the clarified effluent. The end of the trough will be fitted with gates that will permit

using the tanks in series or in parallel, as may be found most effective.

The introduction of aerated sewage into the tanks will be by adjustable slots 3 feet below the surface, with the direction of inflow below the horizontal, thus avoiding cross-currents as far as possible and preventing the formation of septic areas. The discharge pipes will be carried outside the tanks to a height of one foot below the surface in the tank and terminating in a decanting device, consisting of an 18-inch nipple attached to an L that will allow the nipple to revolve and be retained in any position between vertical up and vertical down. This will make it possible to control the discharge of the sludge from zero to a full 4-inch pipe under a 2½-foot head. The sludge will be discharged directly into sludge reaerating tanks, 12½ feet long and 7 feet wide and having an effective depth of 15 feet, with filtros plate arranged as in the sewer aerating tanks. These tanks may also be operated either in series or in parallel, thus making it possible to have a wide range of treatment. From these tanks, gates and outlet pipes with an air-lift will return any desired quantity of activated sludge to mingle with the effluent. Decanting devices, similar to those described for the sedimentation tanks, will permit the drawing off of any desired quantity of sludge into a V-trough connected to a pipe line at a lower elevation in the ravine.

Dewatering Plant

The dewatering plant will consist of tanks and apparatus for treating the sludge with sulphur dioxide, which breaks up the colloids and partially sterilizes both the liquid and the solids. After this treatment they will be passed through a roller press that will reduce the moisture content to about 75 per cent. In this condition the sludge can be taken to the field as a fertilizer or, where the conditions are favorable, placed in beds to be further dried by the sun. During the summer months conditions are perfect for sun-drying. During the winter, when those conditions are not good, the material as it comes from the press will be wanted on the city farm. It is proposed to dry the sludge during the summer to about 10 per cent moisture, pass it through pulverizing rolls, and sack or store it in bins for sale to orange growers. The material, having approximately 7 per

cent available nitrogen and 2 per cent phosphorous compounds, will find ready sale at a good price.

The clarified effluent, after leaving the sedimentation tanks, will be piped to a diversion chamber, from which it will flow to waste in the ravine or be forced by centrifugal pumps into the irrigation system of the municipal farm. The diversion chamber is 5 feet by 14 feet by 14 feet deep with a gate at the bottom and a weir 7 feet above the bottom, discharging to the pipe that leads to the ravine. On the edge of the ravine the wasted effluent will pass over a bluff with a fall of 20 feet, where a series of cascades will give it a final aeration.

Pumping Equipment

Adjacent to the diversion chamber and at an elevation below the weir will be a chamber containing the three pumps with automatic control. One pump with a capacity of 1,000 gallons per minute will be used to pump water to irrigate about 50 acres east of the ravine. Two pumps having a capacity of 2,000 gallons per minute each will supply the main irrigation system of the farm. Connected with one of these larger pumps is a system of pipes and gates which will make it possible to empty any one of the aerating tanks into the irrigation system or into the inflow trough to the aerating tanks. Further, connected to the discharge pipe from the larger pumps is a system of pipes and hydrants to which hose may be attached for flushing or washing and cleaning any part of the premises and also for the irrigation of lawns and shrubbery about the plant.

A delicate problem is that of conducting the sewage that collects on the far side of the ravine east of the treatment plant. The profile across the ravine shows that more than 1,200 feet of the distance is lower than the plant. An inverted siphon is out of the question, as the time required for sewage to flow through is so great that it would become septic before reaching the tanks. A uniform grade would require a trestle 28 feet high for a large portion of the distance. The best possible gradient is 0.27 per cent, and on this the smallest pipe that would give a satisfactory velocity is 20 inches in diameter. The present flow is approximately 225,000 gallons per day, not sufficient to properly fill a pipe of that size, but sewers now under construction will add 500 acres

of tributary territory, and 5,000 acres will probably be added in the near future. To solve the difficulties, a conduit has been designed in the form of the lower portion of an ordinary egg-shaped sewer, having the bottom equivalent to a 20-inch pipe, and until the volume of sewage becomes sufficient to secure satisfactory velocity, it can be flushed by water by the smaller of the pumps. The sides of the conduits will be reinforced to act as girders and will be supported by reinforced concrete supports properly hinged to allow for temperature changes. Beneath the conduit and also on top will be cross-braces consisting of 4-inch I-beams. The latter will support a cover of redwood planking, and this in turn will carry the 10-inch pipe for the return of the sewage to the east side for irrigation and flushing the sewer.

Construction

The tank system will be built in excavation, of reinforced concrete, and properly underdrained by tile. It will require approximately 12,000 cubic yards of excavation and 1,900 cubic yards of reinforced concrete. The air to the filtros plates will be supplied by a battery of hydro-turbine blowers, electrically driven and capable of delivering air at 10 pounds pressure. This type is selected because past experience has demonstrated the value of delivering air properly cooled and at the same time free from dust that would interfere with the efficiency of the filtros plates. It is a question worthy of study and experiment, whether some other method of cleaning and cooling the air might not result in economy of power, as it has been shown that the capacity of being absorbed is 50 per cent greater for dry air than for saturated air. But until the question becomes settled, the method described above will be used, as it has proved most satisfactory.

An attractive building of fire-proof construction will be erected, containing an office for the superintendent and two rooms to be furnished as a chemical laboratory. Another building will serve as a tool house and garage, and a third will contain the principal machinery. At the dewatering plant there will be sheds to protect the presses and store the finished fertilizer. No effort will be spared to make the entire plant as clean and sanitary as possible, and by well-kept lawns and shrubbery, clean,

smooth drives and attractive buildings, to avoid all possible cause of complaint by neighbors and to remove as far as possible the usual attitude toward works of this character.

Cost of Operation and Income

The cost of treatment will be much more than the city has paid heretofore. It will probably be considerably over \$35,000 the first year, increasing as the population increases. However, the city owns a 65-acre Valencia orange grove, a 10-acre grape fruit orchard, and a 50-acre walnut grove, and is engaged in raising certified seed potatoes, and the income from the ranch will more than take care of the cost of operating the plant.

The city is in a position to use consider-

able sludge for fertilizing purposes on its own farms. The farm is entirely owned by the city of Pasadena, while the treatment plant will be owned jointly by Alhambra and Pasadena, four-sixths of it to be the property of Pasadena, the other two cities having no interest in the ranch. The plant will be under the management of the City Managers of Alhambra, South Pasadena and Pasadena. R. V. Orbison, City Manager of South Pasadena, has had considerable experience in sewage disposal, having formerly conducted the experimental plant for the city of Pasadena. The plant will be operated in a way that is expected to eliminate all possibility of offense. The city of Pasadena proposes to make its farm one of the show places in San Gabriel Valley.

Street Paving in Third-Class Pennsylvania Cities

ASPHALT, brick, bitulithic, wood block and amiesite are used as paving materials by cities of the third class in Pennsylvania with brick predominating in the smaller and asphalt in the larger cities. In all cities of this class, according to the Pennsylvania Department of Internal Affairs records, property owners pay a proportionate share of the paving costs, excepting in Reading, Lancaster, Pottsville, Coatesville and Lock Haven, where the city pays the entire bill.

The following table shows the various cities of the third class in Pennsylvania arranged according to their 1922 population, the number of miles of paved highway, and the number of square yards of paving:

| Cities | 1922 Population | No. Miles Paved Highway | Square Yards of Paving |
|---------------|--------------------|-------------------------------|---------------------------|
| Reading | 109,940 | 31.7 | 570,801 |
| Erie | 104,134 | 114.8 | 2,129,536 |

| | | | |
|-------------------|--------|--------|-----------|
| Allentown | 80,467 | 44.23 | 757,404 |
| Harrisburg | 78,635 | 88.88 | 1,312,402 |
| Wilkes-Barre ... | 75,304 | 53.08 | 828,950 |
| Johnstown | 68,723 | 51.101 | 791,551 |
| Altoona | 62,761 | 55.64 | 811,227 |
| Chester | 59,190 | 48.3 | 930,613 |
| Bethlehem | 55,232 | 31.62 | 595,508 |
| Lancaster | 54,213 | 11.7 | 183,373 |
| York | 48,462 | 18.75 | 389,198 |
| McKeesport | 47,716 | 37.95 | 566,000 |
| New Castle.... | 45,837 | 35.64 | ..... |
| Williamsport .. | 36,922 | 17.422 | 335,007 |
| Easton | 34,489 | 8.4 | 155,122 |
| Hazleton | 32,012 | 9.5 | 163,449 |
| Lebanon | 25,136 | 8.75 | 182,195 |
| Butler | 24,254 | 36.00 | ..... |
| Pottsville | 22,314 | 2.11 | 36,450 |
| Sharon | 22,182 | 14.87 | 238,089 |
| Oil City | 21,700 | 24.22 | 353,001 |
| Carbondale | 19,013 | 7.8 | 123,052 |
| Pittston | 18,867 | 7.75 | 122,760 |
| Monessen | 18,542 | 13.00 | ..... |
| Uniontown | 15,921 | 16.15 | 245,064 |
| Bradford | 15,835 | 17.765 | 256,657 |
| Meadville | 14,859 | 21.00 | 334,416 |
| Coatesville | 14,805 | 2.25 | 53,000 |
| Connellsville ... | 14,080 | 16.03 | 233,120 |
| DuBois | 13,955 | 10.5 | ..... |
| Franklin | 10,170 | 10.25 | 191,837 |
| Monongahela .. | 8,862 | 7.15 | 120,230 |
| Lock Haven.... | 8,729 | 2.25 | 45,630 |
| Titusville | 8,600 | 11.1 | ..... |
| Corry | 7,373 | 5.68 | ..... |

Constant Maintenance Necessary to Obtain Smooth Roads

IN the mind of the average user of highways a road is only as good as its riding surface is smooth. The foundation of the roadway may be the most solid and substantial it is possible to build, with grades and drainage carefully taken care of, but if the riding surface be rough and uneven, the road is at once classed by the general user as a poor road. This is true whether the road is surfaced, graveled or paved. Smooth up an earth road with a road-drag, and the user at once declares this to be a good road, and it is from his standpoint, which for the immediate time is the ability to go over the road

speedily and comfortably without unpleasant jarring and jolting.

The road user holds the road officials responsible for a bad bargain in road building just as much as the purchaser holds any other manufacturer or builder responsible for a bad bargain in any other type of construction. He will not be inclined to buy more of the same kind from the same builder. The key to the road-builder who wants to hold his job and satisfy the people for whom he is working is to put a smooth riding surface on every road he builds and keep it there by persistent and consistent maintenance.

—Iowa Service Bulletin.

Balancing Water-Works Income and Expenses

A Discussion of the Finances and Conduct of Business of a Municipally Owned Water-Works as Segregated from Other Municipal Operations

By V. Bernard Siems, M. S.

Associate Civil Engineer, Water Department, Baltimore, Md.

AN adequate water-supply is one of the greatest essentials for the development of any community, for upon it to a great extent depend the health, comfort, and safety of the citizens. To provide these conditions, however, requires a large investment for impounding works, filtration works, distribution system, etc., and upon the cost of this equipment, its operation, and depreciation, the rate charged for water service must be based.

As a general rule, the water departments in most cities show a deficit at the end of each year. The primary causes for such losses are: insufficient rates — water being sold below cost; free water, that is, water distributed to other municipal departments, such as public schools, hospitals, and other institutions, and for the cleaning of streets and kindred uses, in practically unlimited quantities and without receiving any revenue therefor; and unrestricted water waste, both on the distributing system and from the defective plumbing fixtures of private individuals.

The determination of a water rate which is fair both to the operators of the water-works and to the consumer, demands a consideration of many factors. These are briefly suggested as follows: necessary operating expenses; ample allowance for the maintenance of the system; depreciation charges; interest charges on investment; quantity of free water supplied; and the quantity of water wasted by the consumers.

If these outstanding points are borne in mind, the consideration of a system of charges may be begun. The basis of any system of charges for service rendered by a public utility should be in conformity with the principles of equity, that is, the charges should be exactly proportionate to the amount of service rendered, and the amount of water service received can only be measured by having a water meter on each water-supply service. It is therefore advisable that the system be 100 per cent metered.

Front footage water service rates are unjust in that there is absolutely no relationship between the width of the dwelling and the amount of water consumed, and, besides, an unmetered supply permits of much waste. A rate based upon the number of water fixtures in a building is also an unjust system, as there is no relation between the number of fixtures and the number of occupants. The consumption is dependent, however, upon the number of occupants or the character of business carried on at the property supplied.

The regulation of privately owned utilities is now an accomplished fact, and it has unquestionably worked to the advantage of both the utility and the consumer. There can be no sound objection to state regulation of municipally owned utilities, for if these enterprises are properly and successfully conducted, then everyone interested therein should welcome the opportunity to

There is no aspect of the problem of water-works management and maintenance which has been given so little attention on the part of municipal officials as the economic aspect of the problem has been given, and there is a great opportunity in this country for placing municipally owned water-works on a sound financial basis by the establishment of rate structures which will not only provide the money necessary for their maintenance and operation, but which will not unjustly and unfairly discriminate between different classes of consumers.

—Nicholas S. Hill, Jr.

give the widest publicity to their activities. The hearings and reports of the various public service commissions afford such publicity and embody the experience of men trained to analyze utility operations. It should be a source of gratification to all citizens to know that such a body of experts under the guidance of responsible commissioners is available to consider complaints and to supervise the finances of the municipal enterprise.

The Supreme Court of the United States has ruled in a number of instances that public service commissions have no jurisdiction over the rates of municipally owned utilities, but it is believed that by special legislative enactment such powers can be granted. This principle is recognized by the state of Wisconsin, and referring to the *Public Service Magazine*, issue of January, 1922, we find that the tax commissioners of the state of Wisconsin are to levy an impost on the municipality of Stoughton, which had made itself amenable to state taxation by extending its electric service outside the city limits. Stoughton has applied to the Public Service Commission for permission to increase its rates to meet the tax.

Municipal plants do not pay taxes, and therefore their rightful share of taxation is absorbed by the public, and as they are not subjected to such rigid regulations and supervision as are the privately owned utilities, taxpayers are sometimes misled regarding the actual financial situation, as any deficit is supplied by additions to the tax rate.

A specific instance will best illustrate the characteristics of a self-supporting, municipally operated public utility, and the salient features of the plan advocated are therefore briefly illustrated by applying the suggested measures to the operation of the Baltimore City Water Department.

Revenue of the Baltimore Water Department

The investment in plant and property of the Water Department of Greater Baltimore is estimated to be \$35,000,000. By applying a 5 per cent rate of return to this capital investment, the net return would be \$1,750,000. It is the general practise, however, of the public service commissions of the country to allow a rate of return of at least 7 per cent to public service corporations. As it is the purpose of a municipally

owned utility to furnish service to the public at cost, the net return of \$1,750,000, which is in addition to operating and maintenance costs, will cover the annual sinking fund and interest on the present water loans, and will create a reserve amount to finance future additions or enlargements to the water system.

The estimated sinking funds and interest payments are considered to be constant for the duration of the loan. The accumulative reserve amount, in the intervals between its use by the Water Department for financing extensions, could be used by the City Comptroller for temporary financing, and would obviate any short-time borrowing by the city. In order that the necessary increase of this sum should not be interrupted, however, it would be necessary that the market rate of interest be paid on such loans.

The annual depreciation covers the cost of renewing the parts of the impounding, purification, pumpage and distribution works which have deteriorated or have been damaged by use; \$350,000, or one per cent of the value of the plant, is so charged.

By adding together the fair net return of \$1,750,000, or 5 per cent on the approximate investment in the present plant and the private water companies, and an annual depreciation of \$350,000, or 1 per cent on the assumed valuation, together with the operating expenses, aggregating \$1,715,000, of the present department and private water companies, \$3,815,000 is obtained as the total service revenue required to make the enlarged Water Department self-sustaining. Having determined the total service revenue required, the necessary allocation can be made so that the charges will be equitably distributed and in direct proportion to the cost of delivering water to the respective consumers.

The total service revenue may be divided into that received from public fire protection and that derived from general water service. The amount to be charged to public fire protection is determined by multiplying the total number of fire hydrants in the city by a unit charge of \$40, the result—\$192,000—being 5 per cent of the total service revenue. The amount of water that must be potentially available for fire protection increases enormously the capital expenditure on a water distribution system. The general tax levy is the proper source from which the entire cost of public fire

protection should be received, as it is then paid in proportion to the value of the property protected.

By deducting the public fire protection revenue from the total revenue, the general water service revenue, aggregating \$3,623,000, is obtained. This sum, which includes the revenue to be received from private fire protection services, is the amount received from the water consumer. In order that the water service rates may be in direct proportion to the cost of furnishing water to each consumer, the general water service revenue is subdivided into the amount to be received from the fixed service charge and that to be received from the consumption charge. By taking 40 per cent of the general water service revenue, the fixed service charge of \$1,449,200 is obtained.

The fixed charge covers the cost of service, and does not vary as the amount of water consumed, but is a constant charge comprising two elements of cost, namely, the capacity, or readiness to serve, cost, and the consumer's cost. The capacity, or readiness to serve, cost is the cost of labor, material and interest appurtenant to that part of the plant which is idle when the normal demand exists, but which is held in readiness to supply the maximum demand. The consumer's charge covers the cost of reading meters, etc., and varies but little. This charge of \$362,300 is obtained by deducting the readiness to serve cost from the fixed service cost. The sum of \$2,173,800, to be received from the consumption charge, is obtained by deducting the fixed service revenue from the general water service revenue.

Determining the Rates

Having obtained the proper allocation of the revenue, the water service rates, consisting of a fixed service charge and a consumption charge, can be determined. As previously stated, the fixed service charge comprises the capacity, or readiness to serve, charge and the consumer's charge. In order that the capacity charge may be proportional to the maximum capacity of the different sized meters, ratios were ascertained by taking the flow of a $\frac{5}{8}$ -inch meter as unity, and determining the ratios of larger meters thereby. By dividing the capacity, or readiness to serve, charge revenue by the total number of units, the yearly unit capacity charge of \$4.30 per meter is ob-

tained. The consumer's charge revenue divided by the total number of services gives a yearly consumer's charge of \$2.35 per meter. The yearly fixed service charge, that is, the yearly unit capacity charge of \$4.30 and the yearly consumer's charge of \$2.35, therefore varies from \$6.65 for a $\frac{5}{8}$ -inch meter to over \$1,400 for a 12-inch meter. This fixed service rate is chargeable whether the consumer has used water or not, as the water plant must be held in readiness at all times to deliver his maximum demand.

The next step in devising the schedule of rates is to determine the rate per unit of water to be assessed in addition to the fixed service charge. By deducting the fixed service charge revenue from the general water service revenue, the water service revenue of \$2,173,190.75 is obtained, and considering a revenue-bearing water consumption of over three billion cubic feet per year, the average water service rate would be \$0.70 per 1,000 cubic feet. As the cost per unit decreases as the demand increases, a sliding scale of rates has been devised, allowing four classes of consumption and varying from \$0.80 per 1,000 cubic feet for small consumers to \$0.28 for those using over five million cubic feet per year. Domestic services are to be charged a minimum fixed meter service rate of \$12.50, allowing a yearly consumption of 7,300 cubic feet based upon the use of 30 gallons per capita per day for an average family, any excess thereafter to be charged for at the sliding scale rate. The majority of the smaller residential properties will come under this class.

The preceding schedule of water rates is just, reasonable, and not discriminatory, and is devised to meet conditions which must be provided for in any efficiently managed utility. It cannot be argued that rates are excessive which provide revenue only sufficient to take care of operating and maintenance expenses, sinking funds, interest on the various bond issues, and a small surplus to be used for any necessary extensions. Of the amount designated as a fair net return, any excess over interest charges is to be applied to the retiring of the existing bond issues, and to the creation of a surplus for the financing of any future additions or improvements.

While the subject of bond issues is being touched upon, it may be said that it is unwise to extend the term of a bond over a

greater number of years than the effective life of the work which it is to finance, as the direct benefit of the improvements is secured by the present generation, although the usual loans extend over such a long period of time that the following generation is still taxed without receiving any proportionate benefit. This opinion is also expressed by that portion of the constitution of Maryland which reads that "no debt shall be hereafter contracted by the General Assembly unless such debt shall be authorized by a law providing for the collection of an annual tax or taxes sufficient to pay the interest on such a debt as it falls due, and also to discharge the principal thereof within fifteen years from the time of contracting same. . . ."

How Is the Water Department Different from Other Municipal Departments?

The foregoing discussion has dealt exclusively with the financial operation of a water department. The essential difference between such a department and other municipal operations must next be considered and such distinctions judged from the viewpoint of the advisability of their operations as self-supporting financial units.

Still continuing to apply our reasoning with the city of Baltimore as an example, the various municipal activities apart from the sale of water must be considered. Second in importance to a supply of potable water is an efficient system for the disposal of waste, that is, the Sewer Division. Any charge levied on the individual consumer to make this department self-supporting would partake in general of the characteristics of a flat rate. If a flat rate is to be levied, a far more convenient method of payment would be by including this charge in the tax rate proper, which is, in fact, the present method of supporting the sewer-

age system. As there is, however, a direct and unvarying relation between the amount of water consumed on the premises and the amount of waste water issuing therefrom, a revenue-bearing system for sewerage service could be constructed, based upon the metered water consumption of the property. This carries us back to one of the first statements made in this paper—it is absolutely essential to be 100 per cent metered.

The disposal of garbage and ashes is another municipal function. As it would not be feasible to weigh or otherwise make a definite unit charge for each cubic foot of water removed, a flat rate charge would again have to be assessed, and the general tax levy is the proper place for such charges to be made. The Street Cleaning Department—responsible for the cleanliness of all thoroughfares—is another city unit which serves every citizen, but the individual property owner cannot be expected to pay for the benefit derived according to the front footage of his property. The expenses of this department should therefore be taken from the general tax levy. The maintenance of the municipal hospital and almshouses indirectly benefits each and every citizen, but as the patient is rendered free attention, the charge must be distributed over the entire population, that is, taken from the tax rate. The various activities of the Health Department also fall within this category. By this elimination of all other municipal activities the Water Department stands forth alone as an organization capable of being made into an efficient self-supporting organization, selling service at cost to all citizens, who are, moreover, not merely consumers and therefore revenue-producers, but, as citizens of the municipality, also owners of the plant itself.

ACKNOWLEDGMENT.—From a paper read before the Four-State Section of the American Water Works Association.

A New Bridge, But a Mud Road

NEARLY 2,500 persons in 500 automobiles who went over the new Chintoteague Island bridge, Richmond, Va., and the roadway opened November 15 were marooned on the island when trying to return. A sudden heavy rain made quagmires out of the recently constructed road.

Oozy mud, hub deep for miles, made progress impossible, and most of the machines were forced to pass the night where they stood. Hundreds of cars loaded with men, women and children were unable to move. Farmers were busy all night hauling the machines out of the mire with mule teams.

Legislative Programs of State Municipal Leagues

AS most of the state legislatures will be in session during the early months of 1923, THE AMERICAN CITY has asked the secretaries of the various state leagues of municipalities to furnish a list of the subjects on their respective legislative programs. It is believed that not only will these lists be of interest to the municipal officials and civic organizations in the states reporting, but that an exchange of information among the state leagues themselves may be helpful in perfecting the drafts of bills to be introduced into the several legislatures.

Up to the date of preparing this issue for press, the following lists had been received of legislation to be advocated by the leagues:

Iowa

Frank G. Pierce, Secretary of the League of Iowa Municipalities, writes that the following are the principal bills to be presented by the League to the next Legislature:

- The right of excess condemnation where a city makes extensive improvements for parks, boulevards, or otherwise
- Specific authority to adopt a city plan and establish zones within the cities
- Fixing the status of motor busses doing an in-city business, and giving cities control of the same within their limits
- Granting towns the power to initiate proceedings to pave the extensions of the primary roads through the towns
- Amending the civil service law to make all appointments subject to civil service, but permitting removal for cause by the heads of the different departments
- Extending the list of vocations subject to municipal control and license

Minnesota

The League of Minnesota Municipalities, at its recent Crookston convention, went on record in favor of legislation for the following purposes:

- To maintain in cities and villages such rights and regulation of public service utilities doing business therein as now exist and to extend such powers as may be consistent with efficiency and economy of service
- To reduce the publication requirement on home rule charter amendments. (This will require an amendment to the state constitution.)

- To adjust the inequalities existing in the present gross earnings tax distribution
- To render less expensive the issuance of bonds for municipal public improvements
- To provide adequate public health control in cities and counties of Minnesota
- To give authority to the State Department of Insurance to fix the initial fire insurance rates
- To coordinate the administrative activities of state departments in order to prevent duplication of effort and secure efficiency and economy
- To establish a state budget system

Kansas

At the annual convention of the League of Kansas Municipalities, October 17-19, the following bills were favored for introduction into the 1923 Legislature:

- Mob law amendment
- Free licenses for ex-service men
- Amendment of motor vehicle license law
- Standard state zoning enabling act
- Adjustment of levies in cities of the first class
- Adjustment of levies in cities of the second and third class
- Authorization of municipal plants

Utah

Robert N. Young, Secretary of the State Municipal League of Utah, reports that the principal subjects on the legislative program of the League were proposed amendments to existing laws and to the state constitution, as follows:

- Amendment to the existing law covering primary elections
- An amendment to charge school districts of the first and second class with the cost of the assessing and collecting of their share of the general taxes
- An amendment providing that municipal corporations may acquire ownership of, and title to, water to care for future growth
- An amendment providing that the maximum rate to be charged by newspapers for municipal advertising shall not exceed ten cents per line for the first insertion and not more than five cents per line for succeeding insertions
- A home rule amendment to the state constitution, permitting cities to choose their form of government
- An amendment to the constitution which will permit a consolidation of city and county governments

Oklahoma

Dr. F. F. Blachly, Secretary of the Municipal League, writes that the following subjects will probably be presented to the Legislature for their action:

A new paving law

The establishment of a State Tax Commission

Changes in the Fireman's Pension Fund

Certain changes in the functions of the county excise board in respect to their passing upon city budgets

Wisconsin

In addition to other legislation which will probably be favored by the Legislative Committee of the League of Wisconsin Municipalities, writes Ford H. MacGregor, Secretary, an attempt will be made to secure the enactment of the following:

An amendment to the constitution giving Wisconsin cities home rule

A compromise measure covering the general

reorganization of school administration in Wisconsin and probably constituting school districts as separate municipal corporations

A bill changing the present plan of automobile taxation

Texas

The principal subjects on the legislative program of the League of Texas Municipalities for 1923, as reported by Frank M. Stewart, Executive Secretary, are as follows:

Enactment of a law giving the State Railroad Commission jurisdiction over inter-urban utilities

Enactment of laws strengthening the powers of cities in the regulation of utilities and the methods and terms of granting franchises

Enactment of a law providing for a division of the state highway tax so that the cities may receive one-fourth of the amount collected from the resident owners of the city

The City's Legal Rights and Duties

Important Court Decisions Summarized by A. L. H. Street, Attorney at Law

Cemeteries Cannot Be Excluded on Esthetic Grounds

In the case of Park Hill Development Co. vs. City of Evansville, 130 Northeastern Reporter, 645, the Indiana Supreme Court said, in annulling an ordinance of the defendant city, relating to the location of cemeteries:

"A cemetery which is a nuisance, or is so located that it will probably become one if permitted to continue, may be so regulated as to prevent or abate the nuisance, and in a proper case, under sufficient legislative authority, this may extend to the entire prohibition within a designated territory of burials which threaten injury to health and life. . . .

"But we find no authority for holding that the owners of this ground, bounded on two sides by an existing cemetery and on the other two sides by highways, may be forbidden to use it for a cemetery merely because persons visiting a park will pass along where they can overlook it, less than 1,000 feet away. Mere esthetic reasons, not affecting the public health or life or comfort or welfare, are not sufficient ground for restraining the use of private property as a cemetery, if the owner so elects. . . . And an ordinance which does not prohibit burials with reference to anything affecting life, health, comfort, or welfare, present or future, but only in cemeteries within certain arbitrary districts, located within 1,000 feet of parks that were in existence when the ordinance was enacted, and which leaves owners of lands not 'in any ceme-

tery' free to inter bodies or deposit them in vaults on such lands, however close to a park, and does not forbid cemeteries adjoining any parks established after the ordinance was passed to continue in use, and which does not forbid burials within 100 feet of dwelling houses inside the city, in cemeteries, if they are more than 1,000 feet from a park, is clearly unreasonable, and discriminatory."

Ordinance Forbidding Carrying for Display Banner, Placard or Advertisement Except in Public Parades, etc., Upheld

In the case of Waters vs. City of Indianapolis, 134 Northeastern Reporter, 482, the Indiana Supreme Court has affirmed a conviction of Waters of having violated an ordinance of the city forbidding the carrying in public places of any "banner, placard, advertisement," etc., for the purpose of displaying the same, excepting banners, etc., carried in public processions, etc.

Waters walked to and fro in front of a barber shop wearing a shirt on which was inscribed on both front and back a statement to the effect that the shop was "unfair to organized labor." Holding that this violated the ordinance, the Supreme Court says:

"The reason for the classification in the ordinance, which inheres in the subject-matter and the circumstances, is very plain. The carrying

of placards and banners may attract crowds and blockade the streets and sidewalks. By this method, too, class hatred is sometimes stirred up, and a breach of the peace caused. Cities cannot afford police officers enough to watch all persons in all places at all times. These powers to regulate and prohibit are given to enable a city to encompass the control of that which may attract crowds or cause trouble. By the powers given under other provisions of the statute, cities require that notice be given to the police department of public parades. By this method the officers know when and where a crowd is apt to be attracted. They may accordingly make arrangements to properly police those streets, direct the traffic, prevent congestion, and avoid danger and trouble. Appellant is not prevented from participating in these parades. He has the same privileges and immunities that all other citizens have in like circumstances."

Right of Property Owners to Maintain Crossings Over Street Railroad Tracks Upheld

In the case of *Bowers vs. Lancaster, Mechanicsburg & New Holland Railway Co.*, 13 Municipal Law Reporter (Pennsylvania), 209, the Court of Common Pleas for Lancaster County, Pa., holds that where a traction company's tracks are laid in a public highway and the company fails to so fill in the road-bed as to make it possible for near-by property owners to cross the tracks conveniently, such owners will be entitled to construct suitable crossings themselves, despite objection by the company. In the course of a lengthy opinion, the Court says:

"Roads are made for public travel, and while as a means of aid to such travel street railway companies are given an equal right with other users of the roads, it has never been held that the public rights to the same are subject to those of the traction companies. It seems to us that such a condition ought not to be sustained. The public pays for and owns the roads, and every citizen has a right to use them from fence to fence. Of course, in such use there should be a reasonable tolerance on the part of both. Where the line of the railway runs through the country and a finished surface is

not necessary for public convenience, that expense perhaps ought not to be insisted upon until such time as public necessity requires. But in towns and villages, and where crossings are necessarily for the proper use of the land adjoining the road, the road-bed should be filled to such an extent as to render public travel convenient. In case of crossings, if the traction company should not make them itself, it should at least not interfere with the abutting owner in doing so, if he constructs them in a proper manner, so as not to render difficult the operation of the road. The argument that the multiplication of crossings makes the operation of the road more dangerous, is without force. If this was the law, it would be within the power of such a company, for its own selfish benefit, to prevent the public from having access to the roads and streets. The running of the cars is dangerous in itself, but for that reason it is the duty of such companies to use the care which the circumstances of the case demand. We are of the opinion that, if this company does not make crossings where reasonably desired, it cannot interfere with the property owner, who is making them in order to obtain access to his property, or it must fill up the whole road, so that it can be used without obstruction by the public."

Municipal Liability for Personal Injuries in Parks

In the case of *Sarber vs. City of Indianapolis*, 126 Northeastern Reporter, 330, the Indiana Appellate Court recognizes that a city may be held liable for personal injuries directly caused by negligence in the management of its public parks. But it is decided that permitting a barbed wire to remain at the bottom of a stream running through a park, resulting in the drowning of a man who attempted to rescue a woman who had fallen from a canoe in a collision with a motor boat, was not such negligence as would charge the city with liability for the drowning. The ground of this decision is that the place where the accident occurred was devoted to boating only, and not to bathing or swimming.

On the Calendar of Conventions

JANUARY 8-10.—NEW YORK.

American Society of Landscape Architects. Annual meeting. Secretary, Bremer W. Pond, 18 Tremont Street, Boston, Mass.

JANUARY 15-19.—CHICAGO, ILL.

American Road Builders' Association. Annual convention. Secretary, E. L. Powers, 37 West 39th Street, New York, N. Y.

JANUARY 17-18.—NEW YORK, N. Y.

American Society of Civil Engineers. Annual meeting. Secretary, John H. Dunlap, 33 West 39th Street, New York, N. Y.

JANUARY 23-25.—LINCOLN, NEBR.

League of Nebraska Municipalities. Annual meeting. Secretary, Theo. H. Berg, City Hall, Lincoln, Nebr.

FEBRUARY 8.—ATLANTA, GA.

Georgia Commercial Secretaries Association. Annual convention. Secretary, Ruth Steed, Atlanta, Ga.

FEBRUARY 16-17.—UTICA, N. Y.

Conference of Commercial Organization Secretaries of the State of New York. Annual conference. Address: John G. Duffy, Secretary, Chamber of Commerce, Utica, N. Y.

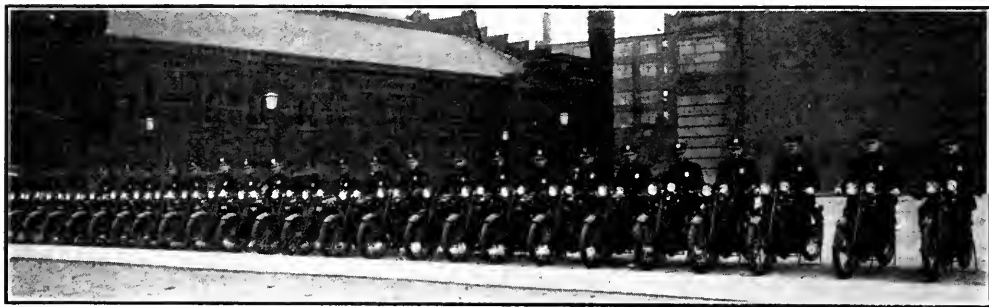
MAY 21-25.—DETROIT, MICH.

American Water Works Association. Annual convention. Secretary, J. M. Diven, 153 West 71st Street, New York, N. Y.

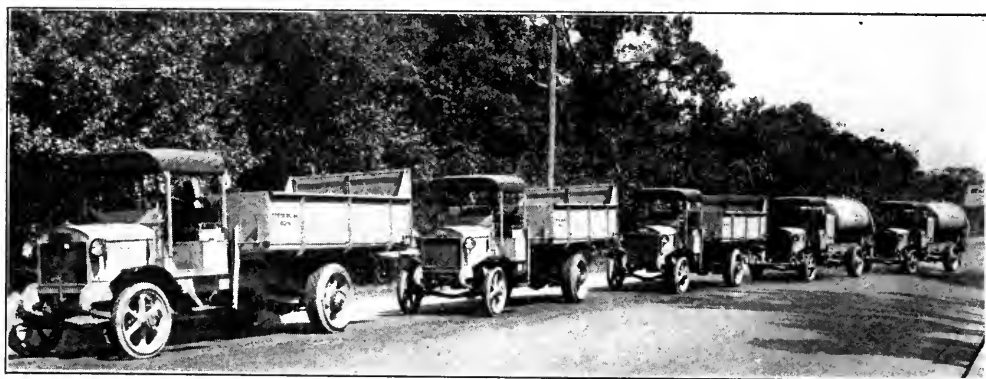
NOVEMBER 12-16.—MEMPHIS, TENN.

American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box 234, St. Petersburg, Fla.

Motor Vehicles for City Service



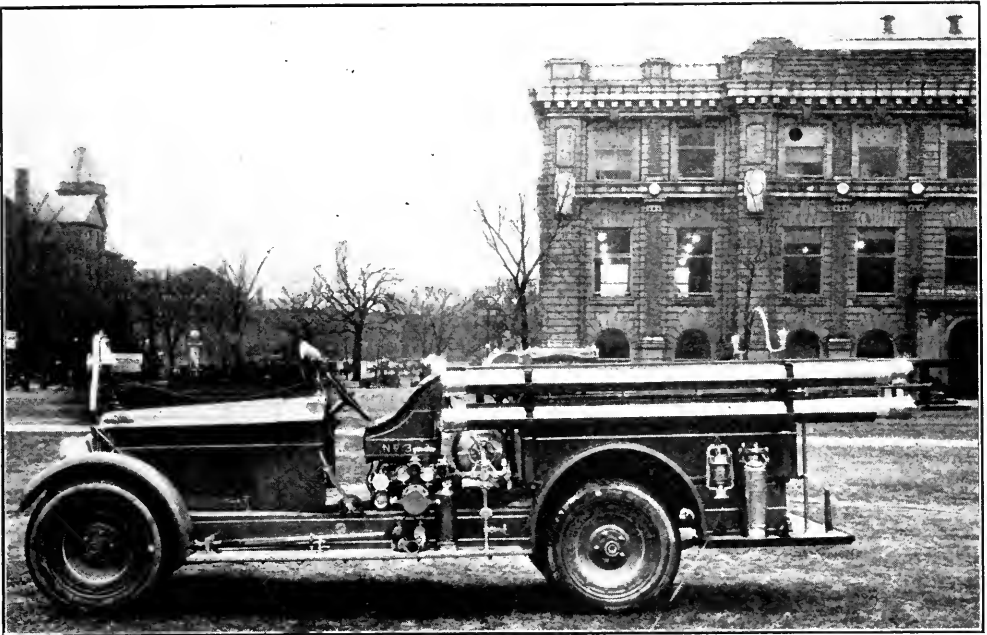
THE MOTOR-CYCLE SQUAD OF CLEVELAND, OHIO, MOUNTED ON HARLEY-DAVIDSON MACHINES



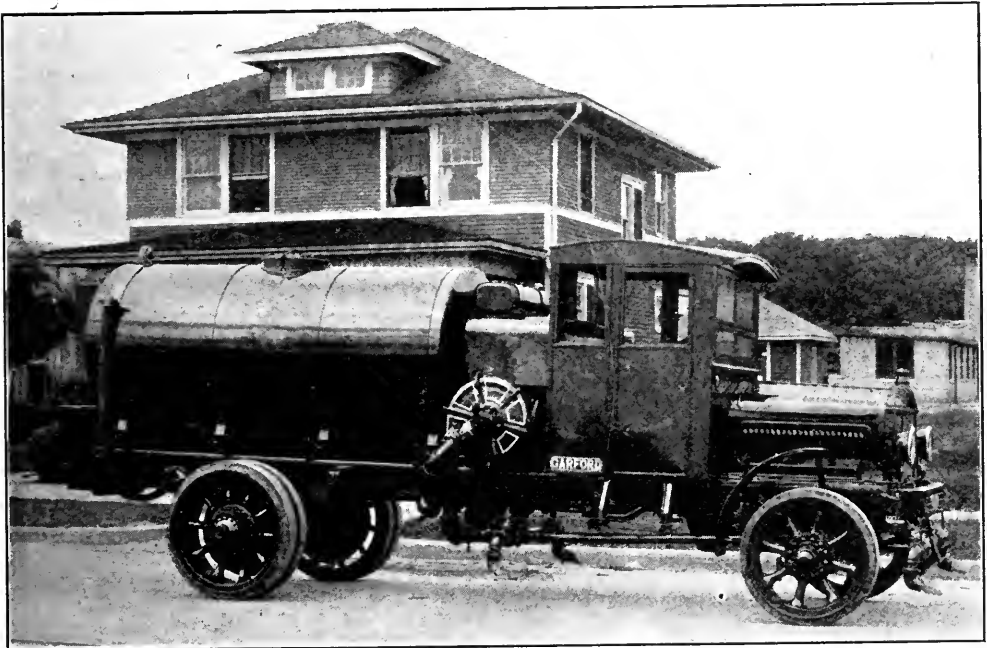
FIVE NEW GMC TRUCKS RECENTLY ADDED TO THE ORIGINAL FLEET OF SEVEN BY THE CITY OF DALLAS TEXAS



TWO FWD TRUCKS USED BY THE CITY OF NEW LONDON, CONN., FOR HAULING RUBBISH These trucks are equipped with steel combination end-dump and stake bodies with horizontal hydraulic hoist. An extra-wide panel gives the trucks a greater capacity



A PACKARD-NORTHERN 750-GALLON, TRIPLE COMBINATION, OWNED BY MERIDEN, CONN.
 This machine has successfully passed the 3-hour, 750-gallon Underwriters' acceptance test. After the acceptance test it threw 810 gallons of water at 126 pounds net pump pressure, showing that it has ample reserve power



A FLUSHER WHICH WORKS 24 HOURS A DAY IN CLEANING THE STREETS OF ALTOONA, PA.
 This Garford chassis is equipped with a 1,000-gallon South Bend pressure sprinkler and flusher unit

Chamber of Commerce Activities in Public Affairs

Film on Zoning Wins Wide-spread Approval

"Growing Pains," the first of the series of civic films produced by Civic Film Service, Inc., 443 Fourth Avenue, New York, has already had a short career which warrants the use of the term successful.

Beginning in a small village in New Jersey as an experiment, the film was shown before the Village Improvement Society, with the result that there was a unanimous vote in favor of asking the Council to take immediate steps to procure a zoning ordinance. Almost at the same time another print was shown to the assembled secretaries of chambers of commerce at the second Western Summer School of Community Leadership at Palo Alto, Calif. Then followed in rapid succession showings before the chambers of commerce of Plainfield, N. J.; Charlottesville, Va.; London, Ont.; Oneonta, N. Y.; Marion, Ohio; Battle Creek, Mich.; Champaign, Ill., and Westfield, Mass.

Tulsa booked a print for a five-day showing. The Western Society of Engineers in Chicago had one on November 14. The Chambers of Commerce of Joliet and Rockford, Ill.; Medford, Ore.; the Board of Education in New York, and the City Planning Commissions of Boston and Cincinnati all had showings during November. December showings include Brooklyn, Lockport and Schenectady, N. Y.; Appleton, Wis.; Greenfield, Mass., a return visit to Plainfield, N. J., and the annual convention of the Illinois Municipal League.

Many favorable comments have been received from the cities in which "Growing Pains" has been shown, and also from leading city planners. Lawson Purdy, President of the National Conference on City Planning, wrote, "I have seen the film 'Growing Pains' and I like it and I should think that bodies of men interested in getting a zoning ordinance would be glad to pay for the use of this reel."

Charles H. Cheney saw it at the showing in Palo Alto and urged its use in the California cities. John Nolen, who saw it in Boston, says, "It seems to me it is excellent, and will help on the movement for zoning." E. H. Bennett, after stating that the technical end seemed very good and adding that in his opinion it would be very useful, has asked for quotations on the film for use by the Chicago Zoning Commission.

Pennsylvania Business Backs Municipal Home Rule

HARRISBURG, PA.—Under the leadership of the Pennsylvania State Chamber of Commerce, business men of the state took a prominent part in securing ratification of the municipal home rule amendment to the constitution by the voters in the November election.

The State Chamber strongly urged the extension of home rule to cities in its annual conventions of 1920 and 1921. To carry this message and others into the individual communities, the Chamber called a conference of state affairs committees of local chambers of commerce in Harrisburg, early in 1922. This conference, composed of delegates from the most active local chambers of commerce, heartily endorsed the adoption of the home rule amendment and outlined a definite plan of publicity for it in all parts of the state.

To facilitate this educational campaign, the State Chamber published in its monthly organ, *Pennsylvania Progress*, a careful survey of the operation of municipal home rule in other states and the advantages to be gained in Pennsylvania by freeing municipalities from their governmental strait-jackets. Fortified with such facts, local secretaries and state affairs committees sold the home rule idea to doubting city fathers and persuaded many newspapers to feature home rule stories with special application to local conditions. These methods, together with home rule forums under local

chamber auspices, inspired vigorous official and editorial statements advocating the amendment. With three leading agencies for community development supporting home rule—the chamber of commerce, the press and the city government—the voter was naturally inclined to accept it.

Wherever possible, the State Chamber of Commerce furnished staff speakers for local chamber forums devoted to home rule. The State Chamber also supplied data to speakers for meetings of city officials and delegated a staff member to work for the amendment at such gatherings.

For these reasons largely, the municipal home rule amendment was ratified by a majority of 132,490, carrying 33 counties—out of a total of 67—which contain 70 per cent of the state's population. Sentiment for the amendment was strongest in the populous counties where commercial organizations diligently molded public opinion in its behalf.

The home rule amendment adopted is permissive and requires legislative action to make it operative. It authorizes the Legislature to empower cities or cities of a class to frame their own charters, subject to such restrictions, limitations and regulations as may be imposed by the Legislature. Laws also may be enacted affecting the organization and government of cities and boroughs, which shall become effective in any city or borough only when submitted to the electors thereof and approved by a majority of those voting thereon. Thus cities only may be given the right to frame their own charters; but both cities and boroughs may be offered a choice, for example, of councilmanic, commission or city manager government as set forth in optional charter acts to be passed by the Legislature.

The State Chamber is participating in conferences of city solicitors and interested organizations to determine a common denominator of home rule demands and to embody it in a single enabling act to be submitted to the Legislature of 1923.

LEONARD P. FOX,

Research Manager, Pennsylvania State Chamber of Commerce.

Civic-Commercial Week Observed by Seventy-Five Organizations

SACRAMENTO, CALIF.—Under the leadership of the Sacramento Chamber of Commerce, 75 community organizations in California observed the week of November 6-

11 as "Civic-Commercial Week." The motive, as set forth in press articles and circulars sent broadcast over California by the Sacramento Chamber, was to have the chambers of commerce and similar organizations equip themselves to "cash in" on the big national advertising campaigns being carried on in the interest of all parts of California. Twelve organizations used the argument in membership campaigns. It was pointed out that they must be given increased support and interest in order that their section might receive its share of the advertising results.

The Sacramento Chamber secured the cooperation of Governor William D. Stephens, who issued a proclamation for the observance of the week. It also prepared newspaper articles, editorials and cartoons which were used by hundreds of publications.

Several novel ideas were developed in the observance of the week. The Covina Chamber of Commerce very successfully conducted a "Home Talent Chautauqua." The Dixon Community Council scheduled a noteworthy event for each day of the week, including participation by school children and a "mailing day," when all citizens were given literature to send to friends and relatives in the East. The Hayward Chamber of Commerce took over the two local newspapers for the week and published daily issues instead of the usual weekly issue. A number of organizations put on "civic-commercial" dinners. In some sections there was an interchange of speakers.

The Sacramento Chamber itself conducted a membership campaign with the cooperation of the Kiwanis, Rotary, Lions and Exchange Clubs, and as a special feature of the week staged a Chamber of Commerce Minstrel Show with the President of the Board of Education and the President of the Ad Club as end-men. Although there was plenty of mirth during the performance, there was also a serious strain running through it, conveying a message of civic loyalty and cooperation.

In view of the short time for preparation, "Civic-Commercial Week"—the first event of this kind ever held in the United States—was decidedly worth while. In fact, the possibility of developing the idea into a tremendously important feature of civic and state development is so generally

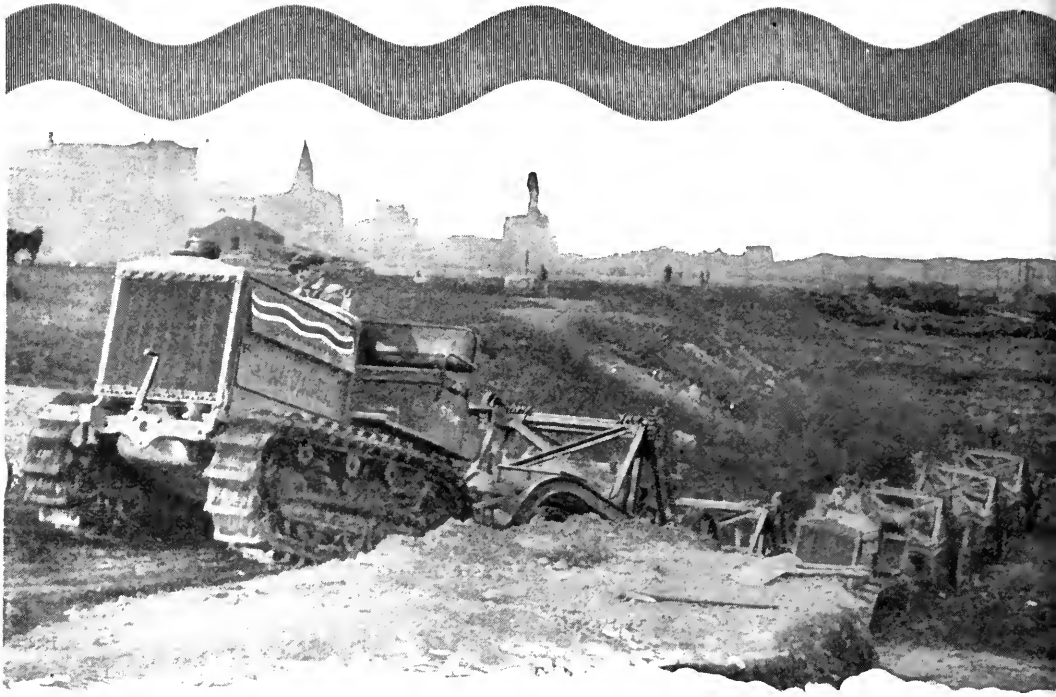


Photo shows two of the six "Caterpillars"* being used by South Park Commissioners, Chicago, to move 350,000 cubic yards of dirt in Grant Park

GETTING THINGS DONE

The "Caterpillar's"* field of usefulness is by no means limited to road making. There is a "Caterpillar"* of size and capacity for every power need. On farm or ranch, in the mining, oil and lumber industries, for snow removal and other civic work—wherever power and endurance are at a premium, the "Caterpillar"* has no real competitor.

There is a "Caterpillar"* Tractor of size and capacity to fit the public works budget of every community. Where cities like New York, Minneapolis and Dallas operate large fleets, other cities like Rockford, Ill., Dodge City, Kan., and Cortland, N. Y., find single "Caterpillars"* indispensable for year round service. Bexar County, Tex., Orange County, Fla., Catawba County, N. C., each with its several "Caterpillars"*, are representative of hundreds of counties that are getting things done by standardizing on "Caterpillars"*. Let us show you what the "Caterpillar"* method will save on your road making and maintenance, park, park improvement, snow removal and other public works. See our exhibit at the Good Roads Show of the American Road Builders' Association, Chicago, January 15th to 19th.

* There is but one "Caterpillar"—Holt builds it. The name was originated by this Company, and is our exclusive trade-mark registered in the U. S. Patent Office and in practically every country of the world.

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recognized that plans are already being formulated to have it made a regular annual event, with every community in the state actively participating.

IRVIN ENGLER,
Assistant Secretary, Sacramento Chamber of Commerce.

Sarnia's \$700,000 School

SARNIA, ONT.—The greatest event in Sarnia's history, and one which the Chamber of Commerce did much to make possible, was celebrated October 28, 1922. It was the formal opening of Sarnia's Collegiate Institute and Technical High School, built at a cost of some \$700,000.

Back in June, 1919, shortly after the Chamber of Commerce had been successfully organized by the American City Bureau, the directors determined to get squarely behind the project of a new technical high school. Extensive publicity and hard work at the polls carried the by-law by a margin of 57 votes.

Of the total cost, the Provincial Government has contributed \$200,000, making the net cost of the school to the people of Sarnia \$500,000. The building is considered the last word in modern school architecture and equipment. That the new institution fills a real need is indicated by the fact that the advance registration totaled 680, including 394 collegiate students, 163 commercial students and 123 technical students.

Sarnia is glad to be judged by its new school.

GEORGE P. FRANCE,
Manager, Sarnia Chamber of Commerce.

City Planning and Sewage Disposal

ASHTABULA, OHIO.—The City Plan Committee of the Ashtabula Chamber has been rewarded for months of careful study by the adoption of its report by the Board of Directors and subsequent favorable action by the City Council. As a result, the Council has made the necessary appropriations for the preparation of a city plan for Ashtabula, and T. Glenn Phillips of Detroit has been engaged by the City Manager as consulting expert.

Another important advance now under way in Ashtabula is a big sewage disposal project. The Chamber of Commerce has had a committee on sewage disposal which has been of assistance to the city in planning this program. The Chamber has also held forum meetings for the purpose of enlightening the public as to details of the plan, and otherwise assisted in the passage of the bond issue on November 7 to take care of the necessary finances for the proposed sewage work. The program calls for a three-year development, and authority was given at the election to issue bonds for the entire work necessary to be done.

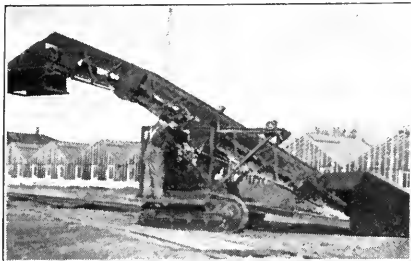
A. J. HORN,
Manager, Ashtabula Chamber of Commerce.

Winter Sports in Greenfield

Civic Spirit, the monthly bulletin of the Chamber of Commerce of Greenfield, Mass., for November, tells of a three-day campaign in which about \$3,600 was raised for winter sports. A four-fold program is planned, with many interesting features.



SARNIA'S NEW COLLEGIATE INSTITUTE AND TECHNICAL HIGH SCHOOL



Moving a Barber-Greene Snow Loader, under its own power, for shipment as snow insurance for a mid-western city.



How Cities Insure Against Snow

Protecting against traffic tie-ups and providing low cost removal.

The Barber-Greene Snow Loader does the work of sixty shovelers, saves as much as \$450 per eight hour shift, works continuously day and night, and saves motor trucks because it loads 5-yard trucks in 8½ minutes where 20 minutes are required for hand loading.

More important than its great economy, however, is the rapidity with which the snow is removed and normal traffic restored.

The most efficient method of removal is to plow the snow into windrows at the curb, loading from these with the Barber-Greene.

The Barber-Greene is the first practical snow loader. It is used in New York, Chicago, Philadelphia, Boston, and Pittsburgh. A number of smaller cities have added it to their snow-

fighting equipment for the coming winter.

Its success is due to its design and to the fact that it is the product of a company that has for years specialized in material handling equipment, and has spent three years in perfecting the present model.

The new Model F, not only handles snow, but by means of a bucket boom can be converted into a bucket loader in summer time for loading sand, gravel, and the like.

Details about its work, performance, and construction will be freely furnished on request.

Barber-Greene Company
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33 Cities

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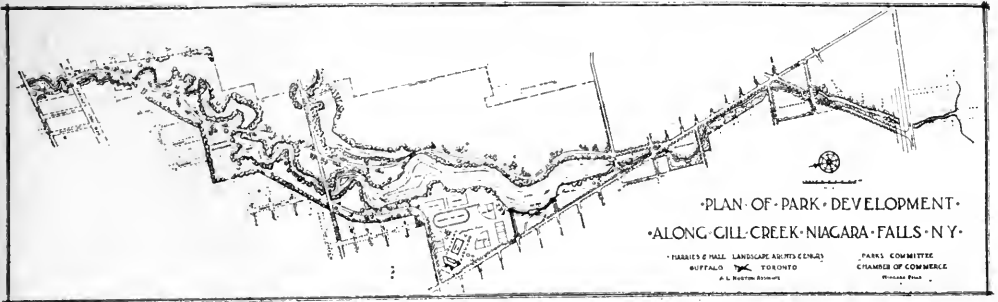


A Fine Recreation Park for Niagara Falls

NIAGARA FALLS, N. Y.—This city, which for years has had one of the world's most famous scenic parks, is now to possess a splendid recreation park. The expenditure of \$350,000 for the purchase of some 304 acres of land for this purpose was recently authorized at a tax referendum.

Located on the east side of the city, the park will extend from the city line on the north to the Niagara River on the south, a distance of nearly 2½ miles. Drives throughout its length will connect at the south with the boulevard of the State

The park is the result of a three-year effort on the part of the Chamber of Commerce to create and crystallize public sentiment on the need for an outdoor recreation area equipped to provide for the wants of school and industrial athletics and the general play needs of the average citizen. The idea grew out of an earlier study of local recreational needs. A Parks Committee examined it carefully and became convinced of its soundness. The committee confirmed its judgment by asking the opinion of every organized group in the community which could be reached. Then followed a long period of quiet education re-



Reservation which follows the upper rapids to the Falls. A main road passing the northern end will link the park with a proposed boulevard along the lower rapids, bordering the western edge of the city, thereby making it a unit in a system of drives encircling the municipality.

A small stream within the boundaries of the park will be dammed at its southern end and, with the overflow from a large swimming pool to be located at the upper end, will furnish sufficient water to permit the construction of a lake three-quarters of a mile long and 400 feet wide, in addition to two lagoons of almost the same length. When completed, Hyde Park, named in honor of a citizen who bequeathed approximately \$100,000 for park purposes, will offer three large playgrounds in different sections of the city, athletic fields for the major sports, beautiful picnic grounds, a permanent band-stand, an outdoor stage and seating arrangements, a wading beach for small children, a commodious swimming pool for older children and adults, and a lake and boating lagoons which can be readily adapted to such winter uses as skating and ice carnivals. A municipal golf course is under consideration.

garding the necessity for a public recreation field, the preparation of and revision of plans, their presentation to official bodies, and the creation of a city-wide campaign organization leading to the approval of the voters. There was nothing unusual about the methods employed; in fact, they were typical of the way in which a Chamber of Commerce must work on many community problems in order to carry them to a successful outcome.

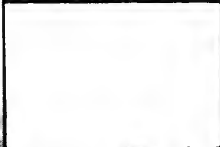
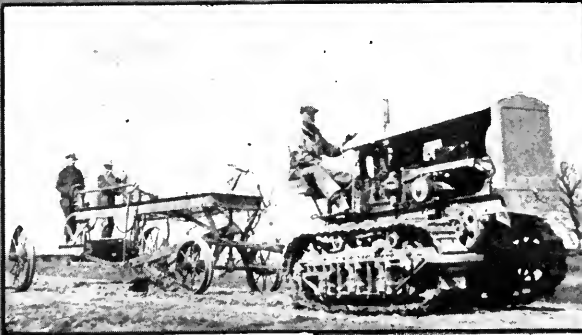
The City Council has appropriated in the 1923 budget a sum of sufficient size to permit the beginning of preliminary improvements, and it is expected that annual appropriations will make possible a continuous development.

R. D. HOUSE,
Secretary, Niagara Falls Chamber of Commerce.

A City Manager Charter for Stockton

STOCKTON, CALIF.—By a vote of nearly three to one, the citizens of Stockton have adopted a new city charter, embodying the manager form of government, to replace the present commission form. The Stockton Chamber of Commerce took an active interest in the campaign for passage of the instrument, lending both financial and moral support. On election day the head-

The **MONARCH** BUILDS GOOD ROADS IN SUMMER AND KEEPS THEM OPEN IN WINTER



The Monarch Industrial Tractor continues to make wonderful performance records in all kinds of road work, including grading, re-surfacing and maintenance, summer and winter. Its ability to turn short corners and work continuously regardless of soil or weather conditions, makes it the universal tractor for road builders. It is the ideal size to handle practically all kinds and makes of road machinery and has ample power and sufficient traction to readily haul this equipment under the severe conditions encountered in the road-building and maintenance field.

Send for "Monarch Facts," the complete story of Monarch tractor performance.

MONARCH TRACTORS, Inc.

WATERTOWN, WISCONSIN

quarters of the organization were used by the charter committee, and members of the Chamber were active in getting voters to the polls.

The new charter was drawn by fifteen freeholders, all representative citizens, elected by the community. They started drafting the instrument during the month of May of this year. The charter will now be submitted to the California State Legislature for ratification and is expected to become effective in July, 1923.

GILBERT D. KEITLE,
Assistant Secretary, Stockton Chamber of Commerce.

Rome's Industrial Exposition and Survey

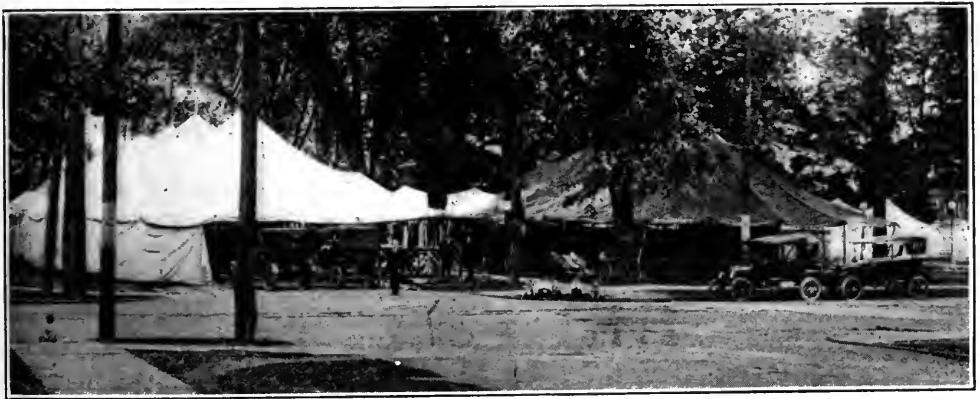
ROME, N. Y.—Recently the Chamber of Commerce of Rome, N. Y., contracted with the General Organization Company, of which Lucius E. Wilson is President, for an industrial and civic exposition and a promotional survey.

The exposition had several unique features. It was held in tents pitched in a down-town street and a small city park. In the photograph the tent on the left is in the street, and the tents on the right are in the city park. There was a connecting passageway 100 feet back. Of the 25,000 square

The size varied from 8 by 8 to 8 by 12 feet. Sixty spaces were sold, and in addition there were twenty automobiles exhibited. The automobiles occupied a tent 40 by 100 feet, all the space in which was sold wholesale to the Automobile Dealers Association.

The celebrated working model of the Loree Breaker was exhibited by the Delaware & Hudson Coal Company. There were candy, ice cream, soft drink and restaurant concessions. The street in which the exposition was held is paved with asphalt, and after the entertainment every evening the auditorium was cleared and there was dancing on the pavement.

The grass on the park between the curb and the sidewalk was not damaged, because the floors of the booths served as a covering for it. In addition to the booths down the sides of the tent over the parking, there was a row down the middle, for which the asphalt served as a floor. This layout gave two 10-foot aisles in the tent on the street. The tents in the park had no flooring, but sawdust was sprinkled in the grass to protect it. This worked satisfactorily. The grass was tramped down, but grew out again in three weeks, as the roots were unaffected.



TENTS WHICH HOUSED THE GREATER ROME EXPOSITION

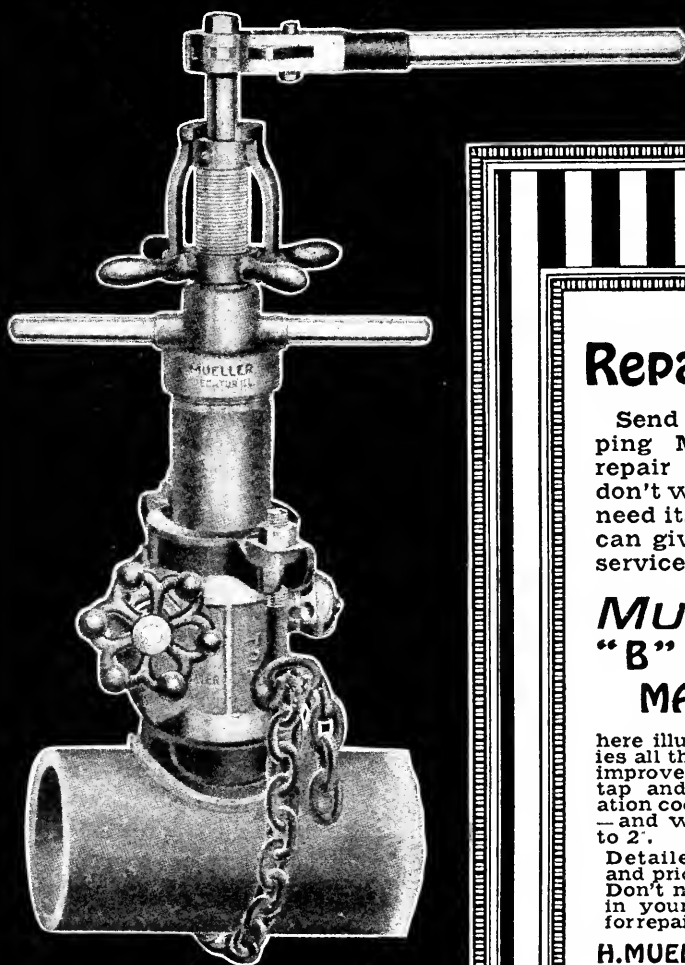
feet of floor space, 5,000 feet was devoted to an auditorium, in which were staged programs of amusement every afternoon and evening.

The exposition opened on a Friday and continued for eight consecutive days. In addition to the entertainments there were exhibits showing everything made and sold in Rome. Spaces were rented at \$60, \$70, and \$80, depending on size and location.

There was a paid attendance of 12,000, of which about 1,200 were children. The admission for adults was 28 cents, for children 10 cents. The funds realized from the exposition were used to pay the fee of the General Organization Company, for the survey and supervising the exposition.

The survey was made by Samuel Wilson and has just been completed.

E. D. BEVITT,
Secretary, Rome Chamber of Commerce.



Repair Time

Send in your Tapping Machine for repair this month—don't wait until you need it. **MUELLER** can give you quick service—**Now**.

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here illustrated, embodies all the new **MUELLER** improvements. It will tap and insert corporation cocks from $\frac{1}{2}$ " to 1" — and will tap **only** up to 2'.

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Reforestation Conference Unites All Forces to Solve Waste-Land Problem

By J. R. Simmons

Forester and Secretary, New York State Forestry Association

RECOGNIZING that the time is at hand for coordinating all the interests concerned in reclaiming New York's waste and idle land, the Conservation Commissioner on November 10 called into council representatives of all the leading interests concerned in the reforestation movement. These include the following: the Conservation Commission; the New York State Forestry Association; the New York State College of Forestry; the Department of Forestry of the State College of Agriculture at Cornell; the American Game Protective Association; the Farm Bureau; the New York State Grange; and the Empire State Forest Products Association.

Most of these departments and organizations have for several years made more or less single-handed efforts in reforestation, often cooperative and at times conspicuously successful. Yet until now there has not been presented a completely united front against the problem arising out of our 4,000,000 acres of waste and idle land.

The state to-day is equipped with nurseries which can be quickly and economically expanded to meet any increased demand for trees; the fire protective system has been perfected to such a degree that the hazard is only one-tenth as great as it was twenty years ago; enabling legislation exists for the procuring of trees at a very low expense, both by private citizens and by the town, city or county wishing to estab-

lish a community forest; all organizations that have an interest are now ready to take the field.

The conference of November 10 passed resolutions providing for appointment of committees, and these have been organized as follows. The Conservation Commissioner continues as general-in-chief of the Conference, which will be called together as circumstances require. The general committee is headed by the Superintendent of State Forests, C. R. Pettis, who is responsible for the working out of the

extensive system of forest nurseries controlled by the state. The Committee on Community Forests is headed by the Forester and Secretary of the New York State Forestry Association. The Forestry Association has for several years served as a meeting-ground of the many forestry interests, represents the public at large, and has devoted its efforts this past year to the building of municipal forests. The

Probably the most convincing argument for planted forests is found in the old plantations of New England and New York, which were set out just after the Civil War period. Some twelve or more of these are still standing in Massachusetts and New Hampshire, and at least two in New York. Measurements made of the Massachusetts plantations show that they contain as much timber as natural stands of equal age, yet they have had practically no care since the day they were planted. The record of these old plantations upsets one of the chief objections to reforestation, namely, that the United States contained no mature planted forests from whose history of cost and growth the question of profit could be determined.

Farm Forests Committee is headed by M. C. Burritt, Vice-Director of the State College of Agriculture. Ferris J. Meigs, prominent timberland owner and President of the Empire State Forest Products Association, heads the Industrial Committee. The Educational Committee chairmanship goes to Dean Franklin Moon of the State College of Forestry. There is a Forestry Development Committee headed by John A. Flannigan of Malone, President of the Northern New York Development Association.



Start now—
to work for Good Roads!

IT'S none too early. Spring—the season when actual operations must begin—is just over the hill. Plan now to have the Tarvia Truck working in your community this year.

Tarvia roads are moderate in first cost and more economical to maintain than any other type of highway that will stand up under modern traffic. Their non-skid surface is smooth, dustless and mudless all the year round.

Call on our Special Service Department. The experience of skilled highway engineers—based on intimate knowledge of every type of road construction—is freely at your service.

Please address your letter to our nearest branch. will receive prompt and careful attention.

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THE BARRETT COMPANY, Limited: Montreal Toronto Winnipeg Vancouver

There is a Conservation Organizations Committee headed by former Commissioner George D. Pratt, and a Forest Taxation Committee headed by Senator F. M. Davenport of Clinton.

To readers of *THE AMERICAN CITY* the question will naturally arise as to how the Conference proposes to deal with the municipalities of the state, and what foundation has already been laid on which to build up the community forest idea. A brief answer here will throw some light.

In the first place, the state can and will under the law provide free trees to any city in New York State desiring to establish a municipal forest or to set to work the idle acres along its watershed. This item provided for, it is safe to predict that the agencies brought together by the Conference will undertake to obtain examination of the tracts to be planted, determine what species should be used, help organize the planting forces, and in other ways encourage the local movements in all parts of the state. The New York State Forestry Association has already presented before the Conference of Mayors a plan on which several cities are now working. The Forestry Association goes so far as to offer to start the municipal forest without cost to the city, and has already demonstrated its ability to make good. In most cases, the Boy Scouts and groups of interested citizens have stepped in and solved the problem of labor. At Yonkers last spring 5,000 trees were set by Scouts in a single afternoon, under the auspices of the Association, and a similar performance took place near Albany in October. The original program of the Forestry Association, adopted at the time of the Thirteenth Mayor's Conference, was to reclaim the watersheds of 26 cities; the movement is now in a fair way to go considerably beyond that objective, considering that so many forces have been united by the Reforestation Conference.

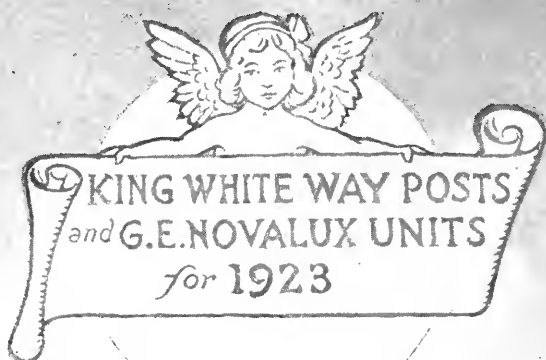
Turning now to an answer to the question of municipal experience in forestry and what exists as a foundation on which to build up the community forest idea, we find that fully a score or more of cities in New York State have made marked progress in forest building. The geographical distribution of the movement is interesting and very encouraging. Here are some of the municipalities that have established forests:

Carthage, Boonville, Gloversville, Glens Falls, Troy, Rochester, Salamanca, Norwich, Yonkers, Newburgh, Watson, Cooperstown, Florida and Malone. Select at random any of these hand-made forests and investigate it. If it has been set long enough to show growth, the beneficial results are immediately apparent to the observer.

The Carthage forest, for example, contains more than half a million trees, some of them with diameters of six inches and a height of nearly twenty feet. In ten years more, at the present rate of planting, the plantation will contain two million trees. Professor G. H. Collingwood, of Cornell, writing in the *Cornell Extension News*, says of this project:

"As a municipality, Carthage found it could get the trees from the nurseries of the New York State Conservation Commission for fifty cents a thousand, plus the cost of transportation. In the spring of 1913 they put out 20,000 four-year-old transplants of Scotch pine, at a cost which did not exceed \$8 an acre. Since then a few thousand have been planted each spring, until 585,000 trees have been set. * * * Fields which a few years ago furnished scarcely enough grass to pay for cutting it are now producing an annual crop of wood amounting to nearly 5,000 pounds an acre. Within the lifetime of many who are watching these trees grow, their contents may reasonably be figured in terms of merchantable board feet. Before fifty years are past it will be possible to cut saw logs from the area, although naturally another fifty years will make possible the cutting of much larger and more valuable logs. It is safe to say that once well established to forest growth and placed under careful management, such an area as this might furnish a million board feet of lumber every year without in the least detracting from its value as a part of the Carthage watershed. A million feet of lumber a year will keep a fair-sized mill going, and should give profitable employment to a number of men. At present freight rates, a million feet of lumber grown at home instead of being shipped across the continent, will keep between \$15,000 and \$25,000 in freight bills right at home."

Another interesting example of successful forest building is the unique project at Cooperstown known as the "Forest of the Dozen Dads," so called because no man was allowed to invest who did not have children under ten years of age who would be expected to profit by the enterprise. Twelve men bought a tract of farming land and proceeded to plant it on the basis of ten to thirty acres a year as an investment for their children.



January 1, 1923.

To Our Many Friends:-

In appreciation of the only asset that money can not buy-YOUR GOOD WILL, we wish you a very Happy New Year.

The King Manufacturing Co.

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by *Wm. King* Pres.

The Proper Cleansing of Glassware and Other Utensils in Public Drinking Places

The Results of Thorough Investigations by Bureau of Laboratories,
Department of Health, New Haven, Conn.

THE common public drinking glass has been abolished by most wide-awake communities, and the more progressive public drinking places are further safeguarding the health of their patrons by proper cleansing of glasses and other containers used in the dispensing of drinks. Many soda fountains and soft-drink places, however, still cling to the old method of a dip into cold or nearly cold water which is often too dirty to be described.

The possibility of the transmission of the infectious agent of disease through imperfectly washed glasses is by no means remote. Many instances of infections of human beings by such means have occurred. Syphilis, tuberculosis, diphtheria, typhoid fever, septic sore throat and nearly all other communicable diseases may be so transmitted. In recognition of this fact, about two years ago Dr. Frank W. Wright, Health Officer of New Haven, Conn., drew up and presented to the Board of Aldermen an ordinance which was passed by them relative to the proper cleaning of glassware and other containers used for the service of drinks to the public.

The city ordinance reads as follows:

ORDINANCE CONCERNING STERILIZATION OF DRINKING CUPS, GLASSES AND OTHER CONTAINERS

Be it Ordained by the Board of Aldermen of the City of New Haven:

Section 1. It shall be unlawful for any person,

firm or corporation maintaining a restaurant, lunch-room, saloon, soda-water fountain or other place where drinks of any description are sold, to dispense drinks from glasses, cups, or other containers unless said glasses, cups, or containers have been sterilized after each serving by immersing in boiling water, subjecting to live steam or some other method of sterilizing approved by the Board of Health.

Section 2. Any person, firm or other corporation violating any of the provisions of this ordinance shall, on conviction, be fined not less than five dollars for each and every offense.

Enacted by the Board of Aldermen, March 24, 1919.

Approved by the Mayor, March 26, 1919.

Operative and in effect April 2, 1919.

1. Glasses used in public drinking places should be thoroughly washed in hot soap and water, rinsed in running hot water and dried before being used by another customer. The soap solution should be changed frequently.

2. Glasses cannot be properly washed in cold water.

3. Of the soap powders tested, those which dissolved most readily seemed to be safer to use in most instances than those which are difficult to dissolve, since the full benefit of a soap powder cannot be obtained unless it is entirely in solution.

4. A saturated solution of chloride of lime will instantly disinfect glasses placed therein.

The following recommendations are made:

1. Wherever possible, a hot water of a temperature of at least 145 degrees Fahrenheit in which a sufficient quantity of an easily dissolved soap water has been placed, should be used for the washing of glasses or other containers, which should be entirely submerged in the solution and left there at least three minutes.

2. For places not equipped for washing glasses with hot water, the saturated solution of chloride of lime is suggested. Glasses disinfected with this solution should, of course, be thoroughly rinsed.

3. Glasses should be thoroughly dried. Experiments have shown that clean, dry glasses do not usually harbor bacteria.


since some difficulty had been experienced in selecting a method of sterilization which would produce the desired result without inflicting great expense and other handicaps on the owners of such establishments.

Investigations and Conclusions

The Department of Health of New York City, through the Bureau of Laboratories, in 1916 made a survey of the various methods of dishwashing obtaining in restaurants throughout the city. A number of experiments were performed, resulting in the conclusion that boiling water is necessary for sterilization.

HOLLOWSPUN

Lighting Standards



THIS new installation of Hollow-spun reinforced concrete lighting standards at Park Ridge, Ill., is noteworthy because it is the first case in which the Novalux ornamental lantern unit has been used with special adapter for application to concrete posts.

Any unit is improved by mounting on an ornamental concrete standard. Catalog supplement No. 9 describes and illustrates a variety of combinations to suit almost any requirement.

**Massey Concrete Products
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Dr. Jane L. Berry, of the Bureau of Laboratories, who had personal charge of an investigation of the methods of washing glassware and other containers in places which dispensed soda water, such as drug stores, corner stands and push-carts, has given some hitherto unpublished facts of interest in connection with the problem of disinfection of containers with chemical solutions. The Centadrink fountains had been using at that time a saturated solution of chloride of lime with which to disinfect their glasses, and this gave surprisingly good results. Not only did the saturated solution accomplish its purpose, but she found that much weaker solutions could be used and that disinfection was practically instantaneous in most instances. The washing of glassware with soap and water diminished the number of bacteria very markedly, but it was necessary to immerse the glasses in water at nearly boiling temperature to effect complete and instantaneous sterilization.

H. N. Cole, in an article in the *Journal of the American Medical Association* in 1916, states that, as a result of a study of syphilitic infections, he has found that boiling water is necessary for complete disinfection of glassware. He says, "There should be stringent laws enforced by careful inspection, requiring the placing of all dishes, glassware and silverware in boiling water for five minutes. This would effectively kill all organisms and fully protect us."

A survey of representative hotels, restaurants, lunch and tea rooms, ice cream parlors and soda fountains, classed as excellent, good, fair and poor, was taken as a basis for study in New Haven. The preliminary survey of the situation in New Haven showed that two methods existed for the washing of glassware in public places, namely, the "wet" and the "dry." The wet method, on account of its simplicity, is the one followed in the majority of the smaller places. As its name would indicate, it consists of serving the customer with a glass which has not been dried after having been more or less washed with one of a variety of soap powders, in sometimes tepid, but more often cold water, and sometimes with-

out the formality of the use of a soap powder. In the dry method, the glasses are washed in hot soapsuds and thoroughly dried, either in a heater or sterilizer or by hand with a towel. The wet method was followed in a fashionable candy shop and it never seemed to have occurred to the customers that they might demand more care in the serving of their orders. Mechanical dishwashers were found only in a few large hotels and restaurants. These are not, as a general rule, used for the washing of glasses.

A series of experiments was carried on with eight different kinds of soap powder and with water at various temperatures, using a laboratory stock culture of staphylococcus. The result of this investigation has shown an inclination on the part of the proprietors of public drinking places to improve their methods and personnel. The better types of places have shown marked improvement, and the smaller places are using paper containers, which are certainly more desirable than imperfectly cleansed glasses. At the present time a higher class of labor can be procured than at the time the investigation was carried on, with a consequent decided betterment in general conditions.

The following conclusions are made as the result of this investigation:

1. Glasses used in public drinking places should be thoroughly washed in hot soap and water, rinsed in running hot water and dried before being used by another customer. The soap solution should be changed frequently.
2. Glasses cannot be properly washed in cold water.
3. Of the soap powders tested, those which dissolved most readily seemed to be safer to use in most instances than those which are difficult to dissolve, since the full benefit of a soap powder cannot be obtained unless it is entirely in solution.
4. A saturated solution of chloride of lime will instantly disinfect glasses placed therein.

ACKNOWLEDGMENT.—From an article by Anna I. van Saun, Ada W. Bancroft and James J. O'Gorman, Bureau of Laboratories, Department of Health, New Haven, Conn., appearing in the *American Journal of Public Health*.

WELSBACH LIGHTING SYSTEM

Streets are lighted primarily for safety, which requires adequate distribution of units so arranged as to safeguard as far as possible against interruptions to continuous service.

A well-lighted community indicates the presence of progressiveness, whereas, darkened streets are a menace to public safety and a discredit.

Beautify the boulevards and avenues by having all services underground.

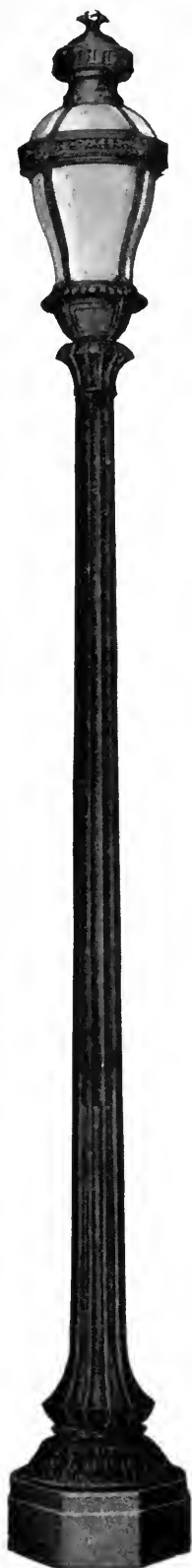
These lamps give a beautiful white light and the illumination is well diffused.

No street lighting system is reliable and dependable unless backed up by Welsbach Gas Units.

Welsbach Street Lighting Co.

of America

PHILADELPHIA



The Case Against the Tourist Camp

By Earl C. Elliott

City Manager, Wichita, Kans.

EDITORIAL NOTE:—This article is the substance of a paper read by City Manager Elliott before the recent annual convention of The City Managers' Association in Kansas City. The author made it clear that his criticisms were directed against what might be termed "en route" camps, and not against what might be called "terminal" camps, such as are to be found at mountain and lake resorts.

IN order that the increasing flock of automobile tourists may be attracted to a particular scenic spot or mountain or lake resort, very progressive and shrewd promoters, both civic and private, conceived the idea of providing camping grounds for their entertainment. These camping grounds appealed to the tourists, and they began to discuss the efficacy of tourist camps en route. These matters were called to the attention of the various chambers of commerce throughout the country, by automobile clubs, automobile dealers, etc., and the chambers of commerce in turn brought pressure to bear upon the municipal government, with the result that many resting spots were provided for these "birds of passage."

Wichita, like most other cities, established a tourist camp. But we find that the institution has only added another problem. I have become thoroughly convinced that there is serious question as to the desirability of such a place in a community, and have definitely concluded in my own mind that the maintenance of such an institution is not a proper municipal function.

I cannot see the equity of taxing the general public for the establishment and maintenance of a free lodging place for those who visit our cities by automobile. It is just as reasonable to expect us to take care of visitors who arrive by trains and trolleys.

The municipality and the public at large derive comparatively no benefit from a tourist camp. I will concede that these tourists buy gasoline, tires, a few groceries, and perhaps some other very necessary articles, but a person who is touring the country is not on a shopping expedition and has no intention of making purchases that are not essential for the task in hand. It may be that a well-established tourist camp reflects a small amount of credit upon a municipality, but the amount of advertis-

ing that such an institution gives is negligible and one which is not worth even a very small amount of money to the general taxpayer. If anyone benefits from the tourist camp, it is a very small group of retail merchants, and if a camp is maintained, it should be maintained by the Chamber of Commerce in the locality, through its retail division.

Doubtless I lack experience, but I have no hesitancy in saying that I have never heard of a good tourist camp. That is to say, I never have heard of a tourist camp fulfilling the dream of its promoters of a resting place for the weary, interested and innocent pilgrim who comes knocking at our gates desiring to enter and pass through.

We find that very few of the bona-fide tourists stop at our tourist camps. They rather prefer to camp along the road or to stop at hotels where they may have an opportunity to rest and to make a satisfactory toilet.

On the other hand, it has been our experience, and the experience of others with whom I have talked, that the tourist camp has developed into a "haven of roost" for the automobile tramp, and for the "boomer" who travels through the country living off the community where he happens to find himself, and depending upon his wits and light fingers to keep him in gasoline and food. Shelter he need not concern himself over, because he finds that provided by a benevolent and generous municipality. The cases of poverty and delinquency that we find in our tourist camps are appalling. Our experience is that many of the folks who light in our camp are tramps who are traveling over the country. They establish themselves in the camp and immediately become a charge upon the community. We have instances of contagion, children have been born in our camp, bootleggers have been traced to that spot. It is a favorite

Community Heating is Logical

SUPPOSE each city family had to manufacture gas and electricity and pump water!

Ridiculous?

Yes. But, no more so than our present system of buying coal at retail, having a "heater" for each apartment or house, every man tending his own little fire and wheeling out his own ashes.

The most logical way is to heat groups of buildings from a Central Heating Plant, distributing the steam through underground mains, buying it as needed, by meter.

We have assisted many hundreds of communities, institutions, industrial plants, and other groups of buildings to the enjoyment of the advantages of Adsko Community Heating.

They have ample heat on tap at each radiator 24 hours a day, controlled by an Adsko Graduated Packless Radiator Valve, as easily as water at a faucet.

We have prepared an interesting booklet on Adsko Community Heating; ask for Bulletin No. 20-AC. Bulletin No. 158-AC describes Adsko Heating—the coal-saving system—for individual buildings with any make of boiler.

AMERICAN DISTRICT STEAM COMPANY

GENERAL OFFICES AND WORKS

NORTH TONAWANDA, N.Y.

OFFICES:

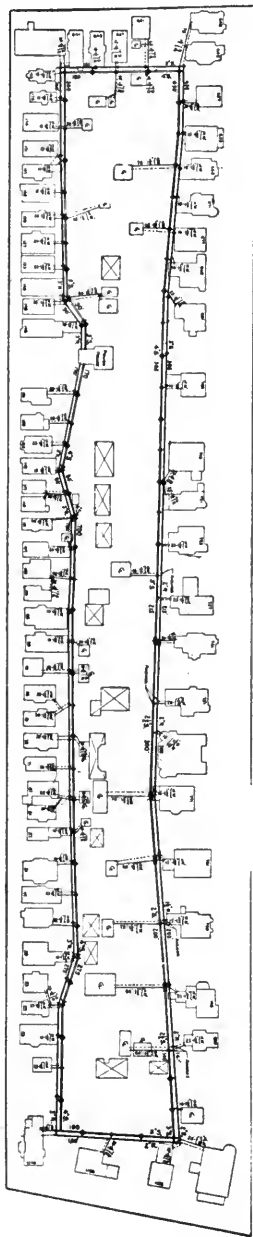
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ADSCO HEATING

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point of assignation, and a source of a great deal of complaint from those persons living in its immediate vicinity.

The log of our camp might be interesting at this point. Of the 180 persons who stopped there during the two months of May and June, 1922, 26 had no business at all; 55 were common laborers; 40 followed some definite trade, such as mechanic, painter or carpenter; 28 were farmers, and the remaining 21 were made up of preachers, horse dealers, garage owners and other persons engaged in businesses of such character. Those who were frankly without employment, and the laborers, and a good many of the tradespeople, were moving from point to point aimlessly in search of work or adventure, using the tourist camp as a stopping point. These experiences are not confined to the tourist camp which we have in Wichita, but seem to be very general.

You will doubtless say here that our camp is exceptionally bad. But, listen to this: Dr. S. J. Crumbine, Secretary of the Kansas State Board of Health, has been making a survey of the tourist camps in the state. When the inspectors were in Wichita we apologized for our camp, and they remarked that it was better established and better ad-

ministered than most of the camps that they had seen.

It may be possible to administer and care for a tourist camp in such a way that it would be impossible for a "boomer" to light, or if he stopped, impossible for him to stay. This would make it necessary to build, at a considerable expenditure of money, a camp with all the comforts of a home. The camp would have to be thoroughly policed. It would be necessary for each individual to check in, with a full description of his car, his family, and an account of whence he came and whither he was going. Then, too, in order to put the matter on a dignified plane, a reasonable charge should be exacted for the accommodations. This process, of course, would demand a considerable administrative force, and produce quite an overhead expense.

But what is the use of it all? Why should we go to so much trouble and expense and spend so much money in order to compete with hotel proprietors, restaurant men, and other folks in our community? It is my conclusion that while tourist camps may be created and administered at a considerable trouble and expense, the end does not justify the means, and the establishment of the "en route camp" is not desirable.

Letters to the Editor

Cooperation for Civic Bodies in Small House Architecture

TO THE EDITOR OF THE AMERICAN CITY:

Inasmuch as The Architects' Small House Service Bureau of the United States and its regional bureaus, which now number seven, are really public service organizations, set up to accomplish a very great work in the field of small home building, we are naturally anxious to cooperate with every civic body interested in housing development.

Deeds are frequently more effective than words, and, therefore, we are confining our efforts as far as possible to what we prefer to call *service*. This service includes assistance to civic organizations in the matter of exhibitions. For example, we have now two traveling exhibits of large, attractively colored photostats, showing small houses

and small house plans and giving specific data about these houses.

We have a model of a six-room house, standard equipment, planned to meet the requirements of the average man. We actually erected this house last season in connection with the *Minneapolis Journal*. We have the model of this, which we can supply.

Still another, and perhaps more effective, method of working with civic organizations, has been our plan of enlisting their cooperation toward the use of our Home Builders' Clinic, a newspaper editorial feature, which is now appearing in a number of newspapers throughout the country. Such publicity as this brings weekly information, of a reliable and professional kind, to prospective home builders in the various communities throughout the United States.

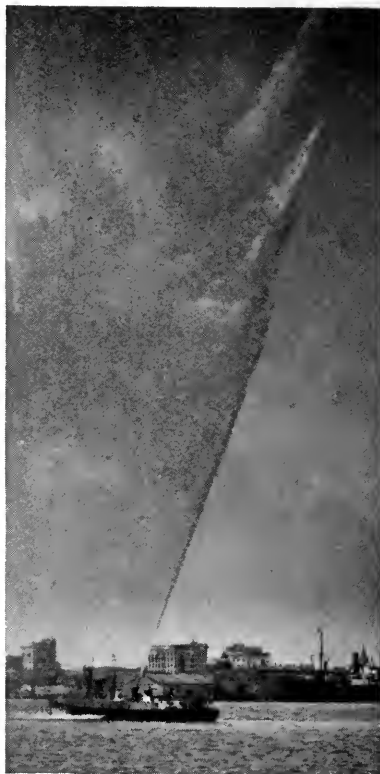
JACKSONVILLE'S REMARKABLE FIRE BOAT

*Gasoline
Engine Driven*



*Pumping
Equipment*

Like land fire fighting apparatus, Jacksonville has a gasoline engine driven fire boat. Norfolk, Virginia, is so equipping a former mine sweeper, also using four STERLINGS. The boats are procurable from the Navy Department at a very low price and assure a fire boat at \$100,000 which, if steam equipped would cost over \$250,000 and thousands of dollars annually to maintain. If you have a water front you need a fire boat.



*Use
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standby electric generators.*

A converted 110 ft. sub chaser pumps 6,000 G. P. M. at 150 lbs. pressure using four of the highly developed STERLING engines on De Laval Centrifugals at 1250 R. P. M. 4760 G. P. M. at 256 lbs. at 1495 R. P. M.

STERLING ENGINE COMPANY

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U. S. A.

We have also supplied civic bodies with plans and literature on home building. The Chamber of Commerce at Virginia, Minn., is an outstanding example of how an alive organization has taken advantage of what we have to offer in the way of exhibits, literature, data, etc. They have incorporated it as a part of their service to the city of Virginia.

I can think of no better way of making our service effective than to cooperate with the civic bodies, such as civic and commerce associations, chambers of commerce, etc., along the lines above suggested. The entire movement is under the control of the American Institute of Architects and has the endorsement of the United States Department of Commerce.

MAURICE I. FLAGG,
Director of Service, The Architects' Small House
Service Bureau of the United States, Inc.
Minneapolis, November 29, 1922.

A Defense of Mechanical Amusement Rides

TO THE EDITOR OF THE AMERICAN CITY:

In a recent issue of your magazine appeared an article criticizing mechanical amusement rides as operated in parks and fairs and advocating the complete abolition of these devices. It is apparent that the writer of your article was misinformed. It is not true that this business originated with the Chicago World's Fair. There were scores of patents on such devices filed in the U. S. Patent Office fifty years ago. There were merry-go-rounds in France more than a century ago. There have been mechanical rides at Coney Island for fifty years. Several manufacturers in America alone have been building these devices for thirty to forty years.

From the accident standpoint these amusement rides are safer than any other means of human locomotion. Several manufacturers report having built hundreds of rides in forty years which have carried from thirty to one hundred million passengers without serious accidents. There is hardly a railroad or a street car line that can show such a record. The automobiles

of America are killing more than one hundred people per week, whereas all the amusement devices of the country have not killed one hundred patrons in the past fifty years.

Most of these rides are designed by engineers and mechanics having a lifetime of experience. They have devoted years to the question of safety. Scores of safety devices have been designed and patented. In the larger cities a special division of the building department approves the plans before a new ride is erected. An annual inspection is given before the license to operate is renewed. From these inspections the number of accidents has been reduced to almost nothing. The factor of safety is so great that a number of the biggest insurance companies are insuring these rides against public accident liability for a very low annual cost. Many operators consider the risk so slight that they carry their own accident risk.

These devices are not "cheaply built." Small rides cost from \$4,000 up to \$25,000. The big rides cost up to \$50,000 and many over \$100,000. Probably \$100,000,000 is now invested in rides in America. The receipts from these are estimated by amusement men at \$50,000,000 per year, of which over \$5,000,000 has been paid annually in recent years in taxes to Uncle Sam.

These rides are located in parks most of which are managed by amusement men of long experience. They know that it is a vital point for them to maintain order, a high standard of conduct and clean moral conditions in these parks. Surely nothing is cleaner or more highly moral than a ride in a merry-go-round, a Ferris wheel or a roller coaster. Park men all agree that the rides are the most popular form of park amusement. They attract the people out into the open, the air rings with peals of laughter, and the cost is so small that the working classes and even the poor are large patrons.

H. G. TRAVER.

Beaver Falls, Pa.,
December 5, 1922.

Semi-Annual Index to The American City

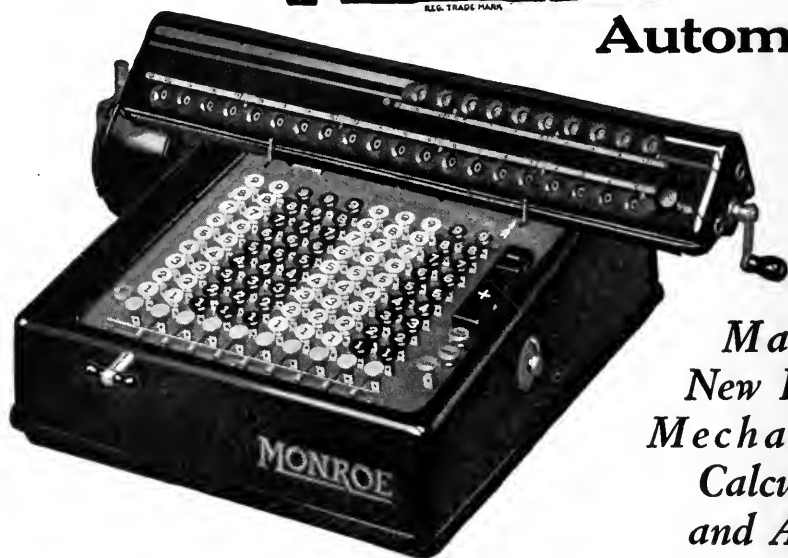
The Index to Volume XXVII (July-December, 1922) is now ready and may be secured by subscribers upon application to the publication office, 443 Fourth Avenue, New York, N. Y.

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Ask to see it in action to appreciate its Speed, Simplicity and Economy in the handling of figures. The coupon below is for your convenience.

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A. C.—1-23

It will interest you to know that —

These Mayors Are in "Who's Who in America"

A somewhat cursory examination of the 1922-1923 edition of "Who's Who in America," recently issued, discloses sketches of the following mayors:

Baltimore—William F. Broening
Boston—J. M. Curley
Chicago—W. H. Thompson
Cincinnati—George P. Carrel
Cleveland—Fred Kohler
Louisville—Huston Quin
Milwaukee—D. W. Hoan
Minneapolis—George E. Leach
New Orleans—A. J. McShane
New York—John F. Hylan
Omaha—J. C. Dahlman
Philadelphia—J. H. Moore
Pittsburgh—William A. Magee
Portland—George L. Baker
Providence—Joseph H. Gainer
Richmond—George Ainslie
St. Louis—H. W. Kiel
St. Paul—L. C. Hodgson
San Francisco—James Rolph, Jr.
Tacoma—C. M. Riddell

The following ex-mayors are also among those represented:

Buffalo—G. S. Buck
Cleveland—H. L. Davis
Detroit—James Couzens
Indianapolis—C. W. Jewett
Los Angeles—M. P. Snyder
Louisville—George W. Smith
Minneapolis—J. E. Meyers
Nashville—William Gupton
Newark—C. P. Gillen
Omaha—E. P. Smith
Pittsburgh—E. V. Babcock
Rochester—H. H. Edgerton
Schenectady—George R. Lunn
Syracuse—H. H. Farmer

If your Mayor or ex-Mayor is listed in "Who's Who" and not included in the foregoing lists, will you drop THE AMERICAN CITY a line, so that this fact may be mentioned in a subsequent issue?

Contractors Pledge Help to City

Contractors of Seattle and vicinity whose business brings them into daily contact with officials of various city departments promised their cooperation to the new city administration at a recent dinner, at which Mayor E. J. Brown, Robert L. Proctor, the new superintendent of the Building Department, and George F. Russell, the new superintendent of the Department of Public Utilities, were guests of honor. The dinner was under the auspices of the Seattle branch of the Associated General Contractors of America, into which the old Master Builders' Association of Seattle recently was merged.

At Least One Acre of Park for Every Hundred Inhabitants Is the New Goal

At the 1922 convention of the American Institute of Park Executives the resolution adopted included the following:

(1) That the American Institute of Park Executives should urge the National Conference on City Planning to appoint a special committee to confer with the Committee on City Planning in Relation to Parks and Boulevards of the American Institute of Park Executives, in order that a complete park system be included in every comprehensive city plan, and that this Institute, in conference duly assembled, endorse this recommendation and tender its services to this end.

(2) We deplore the apparent lack of consideration, by many cities, of the territory immediately surrounding the areas devoted to parks and boulevards. We believe that when a city expends large sums of money for improvements, such territory should be protected from encroachments by commercial or other undesirable enterprises. To this end, we believe that where it is impossible to secure voluntary restrictions, laws should be enacted to provide for excess condemnation. We also believe that every city should set a goal of at least one acre of park for every one hundred inhabitants—such parks to be distributed so as to be available for use by all the people, and to be considered as part of the complete park system of the city.

(3) We also recommend that, wherever possible, the shores of our lakes and rivers should be reserved to the use of all of the people, and that our state authorities should be encouraged in all efforts to attain this end.

Mistakes Affect People Differently

The *City Manager Bulletin* says:

When a printer makes a mistake, he has to "make good."

When a preacher makes a mistake, nobody knows the difference.

When a judge makes a mistake, it becomes the law of the land.

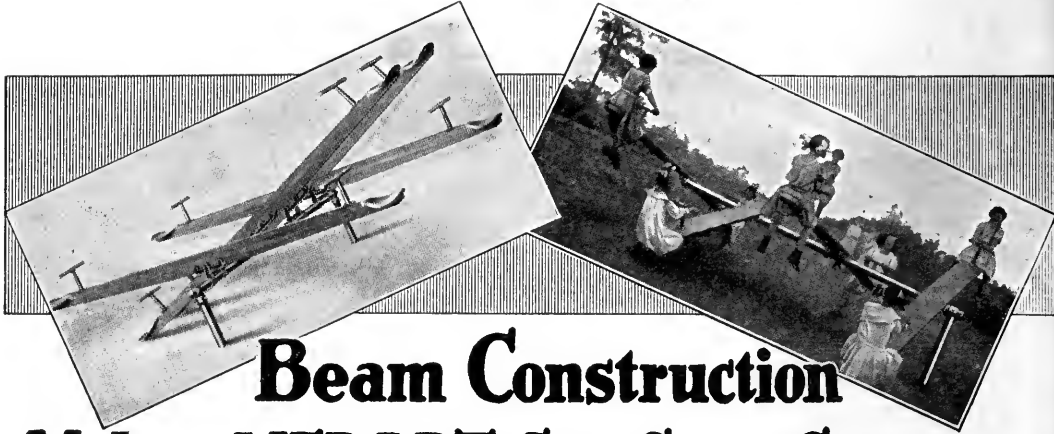
When a plumber makes a mistake, he charges twice for it.

When an electrician makes a mistake, he blames it on "induction," because few folks know what that is.

When a lawyer makes a mistake, it's just what he wanted, because he has a chance to try the case all over again.

When a doctor makes a mistake, he buries it.

But when a city manager makes a mistake, he has to leave town.



Beam Construction Makes MEDART See-Saws Stronger

The beam construction of MEDART Sew-Saws is but another of the many features of superiority to be found in all MEDART Playground Apparatus. A beam for a see-saw is an innovation—it has much greater strength than the old style flat board—and besides, it limits the use of one see-saw to two children unless extra seats are provided, which can be readily done. This precaution against over-crowding avoids danger of accidents.

Another important point—the fulcrum permits of adjusting the see-saw to different weights. It is heavily built to take all the strain put upon it. Children are delighted with the saddle type of seat. It is made of galvanized steel. The handles afford a comfortable grip and prevent smashed fingers.

MEDART PLAYGROUND EQUIPMENT

The careful thought devoted to every detail of MEDART Playground Apparatus and its many features of recognized superiority—all make for SAFETY, SERVICE and DURABILITY. For this reason, MEDART Equipment has been, for 50 years, the first choice of careful buyers everywhere. MEDART prices are much lower than you would expect for apparatus of such outstanding merit.

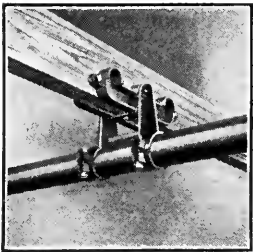


Illustration shows the Medart Beam Construction and improved fulcrum.

Send for Catalog "M-6"

It illustrates the full line of Medart Playground Equipment. Also contains information on playground planning, based on our long experience in this work. This catalog sent free on request.

FRED MEDART MFG. CO.

Potomac and DeKalb Streets,
NEW YORK, 52 Vanderbilt Ave.

St. Louis, Mo.
CHICAGO, 326 Madison St.

SAN FRANCISCO, Rialto Bldg.

Dogs Must Not Delight to Bark and Bite in Lakewood

On November 6, 1922, the following ordinance was adopted by the city of Lakewood, Ohio:

An ordinance relating to dogs which have become a nuisance, and regulating the same
Be it ordained by the Council of the city of Lakewood.

Section 1: That on complaint made to the Police Department on a dog owner on property in the city, which by barking, biting, howling or in any way or manner disturbs the quiet of any person, the police shall issue notice of such complaint to the person owning, keeping or permitting such dog to be kept; and if the person so notified neglects to cause such dog to be forthwith removed and kept beyond the limits of the city, or to be destroyed, he shall be fined \$1 for every day during which such neglect continues, if the magistrate before whom the complaint is heard is satisfied that such dog has disturbed the quiet of any person in the city.

Section 2: That this ordinance shall be in full force and effect at the earliest period allowed by law.

That it will be administered by an official with some sense of discretion is the expectation of the City Council and the hope, no doubt, of the dogs and their owners.

Saskatchewan Has Made Notable Progress in Town Planning

"In the progressive province of Saskatchewan," says the *Journal* of the Town Planning Institute of Canada, "the elementary problems of adjustment between the prerogatives of provincial and civic authorities were settled long ago, and now the province, in possession of one of the best town planning acts in the world and with a capable and enthusiastic executive to see that the act is put into operation, is able to report that the plans of 40 towns and 49 villages were completed during the last year. With a minister and deputy minister of municipal affairs in sympathy with the movement, and a director of town planning who sees the social and economic importance of starting towns along the lines of sensible development, which will pay some attention to the social and esthetic needs of a community, Saskatchewan has rich promise of building for prosperity founded upon something more substantial than boom town sites, 'wild cat' speculation and constructive ugliness and squalor—leading inevitably to social dissatisfaction and economic stagnation. In that province it is being realized

that people need for permanent and contented settlement a place that is fit to live in, as well as a place where work can be found. The time is coming, and is very near, when 'Main Street' development will be recognized as a ghastly social and economic failure."

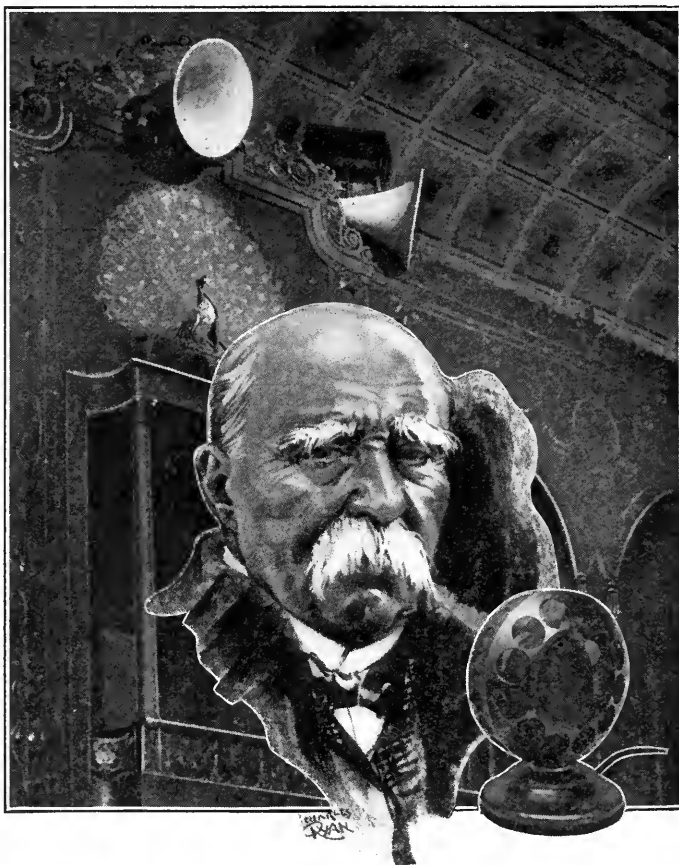
Boston Has Offered \$2,000 in Prizes for Suggestions from Students

A competition open to any student enrolled at the Massachusetts Institute of Technology has been announced by the city of Boston, through Mayor James M. Curley. There are to be four prizes of \$500 each for the "best reports and working plans for solving certain municipal problems and improving the administration of certain municipal functions and activities." The four subjects are street traffic, street cleaning, the sanitary control of necessary but offensive industries and enterprises, and whether or not a better and more effective method of protecting steel construction from heat can be secured.

In awarding the prizes, one judge is to be selected by the Mayor, one by the head of the Department of Civil and Sanitary Engineering at the Institute, and the third by the two so selected. The competition will close May 1, 1923.

The Federal Children's Bureau Has Inaugurated a Recreation Service

The inauguration of special service in the field of recreation is announced by the Children's Bureau of the U. S. Department of Labor, with the appointment to its permanent staff of Martha Travilla Speakman, recreation expert. Miss Speakman was in charge of the organization of play in the schools of Porto Rico, during the "Children's Year" campaign recently concluded by the Children's Bureau. In addition to her work in Porto Rico, Miss Speakman has served as head of l'Esperance, a home for French war orphans, and participated in the Friends' Relief Work in France and Austria. She directed and organized recreational centers, playgrounds, and summer camps in various parts of the United States after completing her training in Swarthmore College and the recreation department of the Chicago School of Civics and Philanthropy.



Suppose the "Tiger" Came to Your Town!

Western Electric Public Address Systems amplified the "Tiger's" addresses in New York, Chicago and Philadelphia.

A telegram has been received from Colonel Bonsall, in charge of Clemenceau's tour, in which the war Premier of France says:

"The amplifying apparatus which I used in Chicago and New York was simply miraculous. It opens up new fields of oratory and enables me to reach portions of an audience to whom I could never have hoped to carry my message without its aid."

Western Electric **Public Address Systems**

amplify the voice of the speaker perfectly many thousand fold without distortion so that, though his message be spoken in a conversational tone it will be heard by thousands.

Ask for Bulletin 672-AC. It gives full details of both indoor and outdoor equipment—products of an organization that has been making and distributing reliable electrical communication equipment since 1869.

Western Electric Company

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Municipal and Civic Publications

Prices do not include postage unless so stated

HIGHWAY RESEARCH

"Highway Research Projects in the United States." Results of Census by Advisory Board on Highway Research, Division of Engineering, National Research Council, in cooperation with the Bureau of Public Roads, United States Department of Agriculture, by William Kendrick Hatt, Director, Advisory Board. Published as Bulletin No. 21 by the National Research Council of the National Academy of Sciences, Washington, D. C. October, 1922. 107 pp. A census of 479 research projects in highway engineering and highway transport, current or recently completed, in which are sought those data upon which highways may be wisely selected, economically built to conform to the mechanics of the situation, and operated in the interests of the public. (Apply to the Publication Office, National Research Council, 1701 Massachusetts Ave., Washington, D. C.)

CONCRETE ROADS

"Portland Cement Concrete Roads," by James T. Voshell, District Engineer, and R. E. Toms, Senior Highway Engineer, U. S. Bureau of Public Roads. Bulletin No. 1077 of the U. S. Department of Agriculture, October 21, 1922. 67 pp. Views, diagrams and tables. Prepared to supply reliable information for highway engineers and others interested in the improvement of public roads. Covering construction, cost and maintenance. (Apply to the Government Printing Office.)

CHILD CARE IN COUNTIES

"County Organization for Child Care and Protection." Publication No. 107 of the Children's Bureau. 1922. 173 pp. Describing some of the most important recent administrative advances in the local care of dependent, defective and delinquent children. Planned and edited by Emma O. Lundberg, director of the social service division of the Children's Bureau. (Apply to the Children's Bureau, Washington, D. C.)

MUNICIPAL CIVIL SERVICE COMMISSIONS

"The Character and Functioning of Municipal Civil Service Commissions in the United States." Report of the Committee on Civil Service of the Governmental Research Conference of the United States and Canada, submitted at the annual meeting in Cleveland, June 1-3, 1922. 104 pp. Aside from treating the subject as stated, the report draws lessons from the experience of private concerns and of other countries in employment administration, and suggests ways of improving our civil service administration, with particular reference to the make-up of the commissions themselves. It summarizes the replies to two questionnaires on the subject. Free. (Apply to William E. Beyer, Chairman, Committee on Civil Service, Governmental Research Conference, 1417 Sansome Street, Philadelphia, Pa.)

TOWN AND COUNTRY

"Some Factors in Town and Country Relationships." by Augustus W. Hayes, Assistant Professor of Sociology, Tulane University of Louisiana. Research Bulletin, September, 1922. 46 pp. 1 photograph. Diagrams. Published by the Department of Sociology of the University, the United States Department of Agriculture cooperating. "The fertile suggestion developed in this study, of replanning trade and social center locations, so farmers have the grade they need for their advancement and growth, is very unique." (Apply to the Department of Sociology, Tulane University of Louisiana, New Orleans, La.)

THE CITY MANAGER PLAN IN PASADENA, CALIF.

First Annual Report of the City Manager of the City of Pasadena, California, 1921-1922. Finances and activities of the various departments. The savings effected are shown. 44 pp. Illustrated with views and graphs. Tables. (Apply to C. W. Koerner, City Manager.)

CITIZEN, JR.

Clara Ewing Espey. The Abingdon Press, New York. 1922. 206 pp. One of the Abingdon Religious Education Texts. David G. Downey, General Editor; Week-Day School Series, George Herbert Betts, Editor. Illustrated by symbol pictures. \$1.25.

Lessons in Christian citizenship progress and practice.

FIRST NATIONAL AIR INSTITUTE

The addresses given at the Institute, which was held under the auspices of the Detroit Aviation Society in Detroit, Mich., October 11, 1922. The Institute was arranged by committees representing the National Advisory Committee for Aeronautics, the Society of Automotive Engineers, the American Society of Mechanical Engineers, and the Aeronautical Chamber of Commerce of America, Inc., and participated in also by the American Bankers' Association, the American Bar Association, and the National Aircraft Underwriters' Association. 46 pp. (Apply to L. K. Bell, Secretary, Aeronautical Chamber of Commerce of America, Inc., 501 5th Avenue, New York, N. Y.)

MUNICIPAL CEMETERIES IN WISCONSIN

Mimeographed Information Report No. 25, issued August, 1922, by the Municipal Information Bureau of the University Extension Division of the University of Wisconsin, Madison, Wis. 27 pp. Based on information received from 34 Wisconsin cities whose cemeteries are under municipal control. Covering the administration and financial management of these cemeteries. (Apply to the Municipal Information Bureau.)

AMERICANIZATION IN DELAWARE

Under this title, covering the Americanization work of the Service Citizens of Delaware for 1921-1922. Prepared by Helen Hart, Director of the Americanization Bureau, September 1, 1922. 61 pp. Many interesting illustrations. The Bureau has organized and developed the facilities which the foreign-born residents of the state most need in order to participate in the life of the American community. (Apply to Service Citizens of Delaware, Wilmington, Del.)

HIGHWAY TRANSPORTATION

Report of Thos. H. MacDonald, Chief of the Bureau of Public Roads, for the fiscal year ended June 30, 1922. Issued October 15, 1922. 43 pp. Numerous tables. In the development of "complete and economical highway transport throughout the nation" . . . "the adoption of the Federal-aid highway system provided for by the Federal highway act and the significant researches of the past year constitute the greatest forward steps that have ever been made." (Apply to the Bureau of Public Roads, U. S. Department of Agriculture.)

THE SMOKE NUISANCE

"The Smoke Problem at Boiler Plants." A preliminary report. By D. T. Randall. Bulletin 39 of the Bureau of Mines, Department of the Interior. Reprint of U. S. Geological Survey Bulletin 334, revised by S. B. Flagg, engineer. 31 pp. Besides a statement of general smoke conditions in the United States, a study of smoke production and smoke prevention, and a bibliography on the subject, the pamphlet contains information on the smoke prevention ordinances in 17 large cities. Price 5 cents. (Apply to the Government Printing Office, Washington, D. C.)

FIRED POWER-PLANT BOILERS

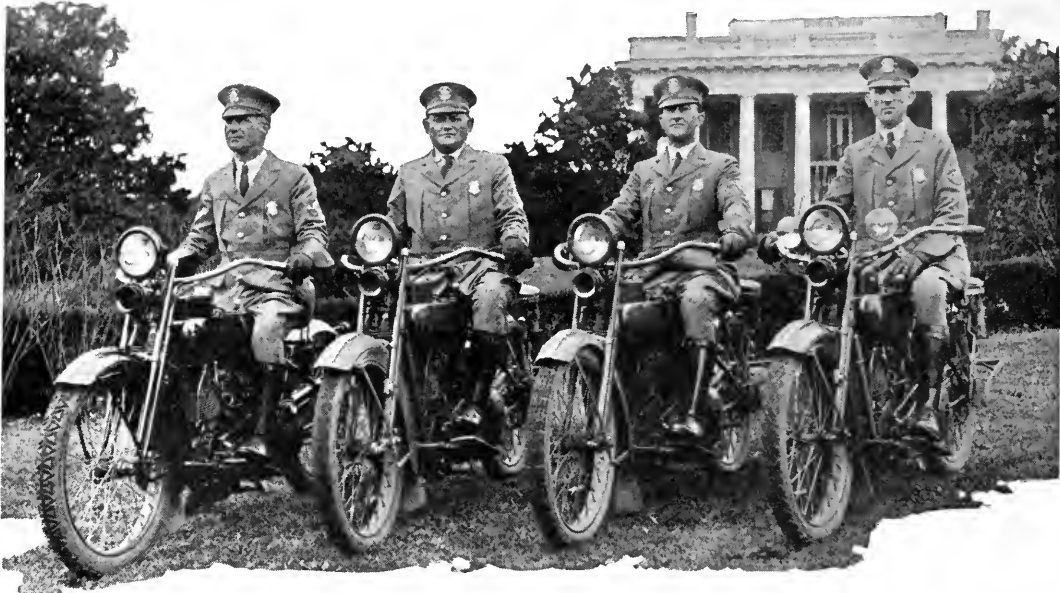
"Hand Firing Soft Coal Under Power-Plant Boilers," by Henry Kreisinger. Technical Paper 80 of the Bureau of Mines, Department of the Interior. 83 pp. Many diagrams. Published to meet the needs of the men, many without a technical education, who are employed in small plants of 1,000-horse-power capacity. Price 10 cents. (Apply to the Government Printing Office, Washington, D. C.)

MOSQUITO CONTROL IN TEXAS

Two circulars issued by the Texas State Board of Health: a four-page quarto folder entitled "Mosquito-Borne Diseases"; and a single-page sheet entitled "Malaria." Both dealing with the responsibility of the individual for eliminating mosquitos and thus also eliminating malaria, dengue and yellow fever. (Apply to the Texas State Board of Health, Austin, Texas.)

MOSQUITO CONTROL IN NEWPORT, R. I.

A report of the Committee on Mosquito Control of the Newport Chamber of Commerce, submitting the report of Dr. Frederic P. Gorham, of Brown University, made August 10, 1922, after an inspection of the various sections described. 12 pp. (Apply to Marion Eppley, Chairman of the Committee on Mosquito Control.)



They're "Go-Getters" in Macon

MACON, GEORGIA, has 4 Harley-Davidson Police Motorcycles. Officer Garrett *in one month* made 123 arrests with fines amounting to \$1,224.15.

Police Chief Thomson says: "I'm perfectly satisfied with our Harley-Davidson equipment. Our motorcycle squad is an efficient and necessary part of our force. By the fines resulting from the arrests they make, they pay for their equipment many times—besides keeping up their machines and paying their salaries."

Macon is but one of over 1100 cities and towns where Harley-Davidsons are increasing police efficiency. How about *your* city? Remember, no town is too small, no city too big, for Harley-Davidson protection.

Write for special Police Motorcycle literature. Get the facts on the 1923 Harley-Davidsons, with their 10 improvements and sharply reduced prices. No obligation to you.

HARLEY-DAVIDSON MOTOR CO.
MILWAUKEE WISCONSIN

Harley-Davidson

World's Champion Motorcycle

PUBLIC SAFETY

"Trend of Public Accidents in the United States," Report of the Committee on Public Accident Statistics, Public Safety Section, National Safety Council, for the year 1922. 32 pp. Charts and tables. Setting forth a plan for recording public accidents in the principal cities of the United States, in order to get the facts which will indicate what measures the accident-prevention movement should take for immediate suppression. Other suggestions are made for comprehensive work in public safety. (Apply to the National Safety Council, 168 North Michigan Avenue, Chicago, Ill.)

AMSTERDAM HOUSING

"Amsterdam—Old and New," By Clarence S. Stein. A comparison of the methods adopted by Amsterdam and New York City to meet the housing dilemma. Housing Reprints—I. Published for the Committee on Community Planning of the American Institute of Architects, by the Journal of the American Institute of Architects, 313 East 23rd Street, New York, N. Y. Price 30 cents. 20 quarto pp. Photographs, drawings and plans. (Apply to the publishers.)

SOCIAL WELFARE

The Journal of Social Forces. Volume I, Number 1. November, 1922. Published by The University of North Carolina Press, Chapel Hill, N. C. 50 cents a copy; \$2.50 a year. Quarto. 72 pp. The Editorial Notes explain the broad and definite plan of this new periodical, indicated by the contents of this number: articles—"The Measurement of Social Forces"; "State Programs of Public Welfare in the South"; "Community Organization: A Study of Its Rise and Recent Tendencies"; Departmental Contributions—"Teaching and Research in the Social Sciences"; "Inter-State Reports from the Fields of Public Welfare and Social Work"; "Conferences for Social Work"; "The Church and Social Service"; "Inter-Racial Cooperation"; "County and Country Life Programs"; "Progress in Town and City Programs"; "The Work of Women's Organizations."

THE PLANNING OF CITIES

"Modern City Planning—Its Meaning and Methods," by Thomas Adams, Town Planning Consultant to the Dominion of Canada; Lecturer on Civic Design, Massachusetts Institute of Technology. 24 pp. Illustrated. Reprint from the June, 1922, number of the National Municipal Review, completing a group of four pamphlets on city planning, published by the National Municipal League, 261 Broadway, New York, N. Y. A comprehensive, definite explanation of the need, methods, problems and legal basis of city planning. ((Apply to the publishers.)

BUILDING OFFICIALS' CONFERENCE

Proceedings of the Eighth Annual Meeting, held in Indianapolis, Ind., April 25-27, 1922. 119 pp. Illustrated. At this meeting a resolution was adopted expressing the opinion that "legislation should be enacted by which building operations shall be restricted to architects, builders, superintendents of construction, or others who have by proper evidence shown their ability or capacity for undertaking such building operations and on whom individual responsibility for the safe prosecution of the work and a compliance with the laws relating to buildings, can be placed." Another resolution was adopted recommending to legislators "the favorable consideration of the provisions embodied in an ordinance for the construction of chimneys recommended by the National Board of Fire Underwriters." (Apply to Fred W. Lumis, Secretary, Building Officials' Conference, Springfield, Mass.)

MUNICIPAL MUSIC IN PITTSBURGH, PA.

Mimeographed report of the Civic Club of Allegheny County on the Club's activities relative to municipal music. 8 pp. The Civic Club accepts the responsibility of seeing that the money appropriated is spent economically and efficiently and performs all services necessary to the success of this movement. It has taken the hand music out of politics. (Apply to Miss H. Marie Dermitt, Secretary, Civic Club of Allegheny County, 608 Keenan Building, Pittsburgh, Pa.)

RURAL COMMUNITY BUILDINGS

"Uses of Rural Community Buildings," by W. C. Nason, Junior Agricultural Economist, Bureau of Agricultural Economics. Farmers' Bulletin No. 1274 of the U. S. Department of Agriculture. July, 1922. 32 pp. Illustrated. Showing the growing interest in community buildings, standard types of buildings and their uses, and representative examples of community building activities. (Apply to the Government Printing office, Washington, D. C.)

SCHOOLS AND THE CITY PLAN

"School Distribution and Areas in the City Plan," by George Burnap (Elsie Miriam Farrett collaborating). 15 pp. in the November, 1922, issue of The Architectural Record. Views and plans. "Schools have a duty toward the city plan, the city plan has an obligation to the schools; it is imperative that there be no shirking of responsibility on either part." (Apply to The Architectural Record, 119 West 40th Street, New York, N. Y.)

NEW YORK CITY SCHOOLS

Reports of the Superintendent of Schools to the Board of Education of the City of New York: "Activities of the Department of Physical Training;" "New School Building and Sites;" "Construction and Maintenance." Prepared respectively by Dr. A. K. Aldinger, Director of Physical Training, under the supervision of Associate Superintendent Edgar Dubs Shimer; C. B. J. Snyder, Superintendent of the Bureau of Construction and Maintenance; and Edward B. Shallow, Associate Superintendent. All issued in the fall of 1922. Views, diagrams and tables. (Apply to the Board of Education, New York, N. Y.)

EUROPEAN STREETS

"Report of European Trip of the Committee on Streets and Alleys, July-August, 1922," submitted to the City Council of Chicago, October 4, 1922. Observations on street paving and curbing, and the general financial arrangements in relation to those subjects in the cities of Berlin, Prague, Vienna, Munich, Frankfurt-on-Main, Cologne, Paris, and London, with conclusions and recommendations. (Apply to James T. Igoe, City Clerk, Chicago, Ill.)

GUIDE TO FORESTRY

Under this title, Book One, by Joseph S. Illick. Bulletin 26 of the Pennsylvania Department of Forestry. R. Y. Stuart, Commissioner. Prepared primarily for the Boy Scouts of America, American Forestry Guides, and other junior outdoor organizations, this pamphlet of 83 pages contains valuable, well-illustrated material on the characteristics and value of trees and the preservation of forests from fire. Special information is included regarding the State Forests of Pennsylvania. (Apply to the Pennsylvania Department of Forestry, Harrisburg, Pa.)

WATER-SUPPLY INSTALLATIONS IN THE COUNTRY

"Water-Supply Installations for Farmsteads and Country Estates," by William Paul Gerhard, C. E., Dr. Eng. Consulting Engineer. 24 pp. Analyzing the problem as the hydraulic engineer handles it, under the large divisions of sources of supply, storage, distribution, and fire protection, with practical details clearly presented. (Apply to author, 17 West 42nd St., New York, N. Y.)

BUILDING CODE ORDINANCE

Building Code Ordinance for Boroughs, Towns and Villages within Allegheny County, Pa. Recommended by the Fire Marshal of Allegheny County and approved by The National Board of Fire Underwriters and The National Fire Protection Association, 53 pp., exclusive of advertising. (Apply to Thomas L. Pfarr, Chief Fire Marshal of Allegheny County, Pittsburgh, Pa.)

HENDRICKS' COMMERCIAL REGISTER OF THE UNITED STATES

31st (1923) Edition. Annual. 2,482 pp. S. E. Hendricks Co., Inc., 70 Fifth Ave., New York, N. Y. \$15.00.

The new 1923 edition of the Register contains 150 pages over and above the 1922 edition; 125,000 changes and additions were made to the new edition. The lists completely cover the electrical, engineering, machinery, building, manufacturing, chemical and other industries, together with all industries allied thereto, and are for the use of both buyers and sellers. The recently sprung-up radio trades have been thoroughly compiled and classified.

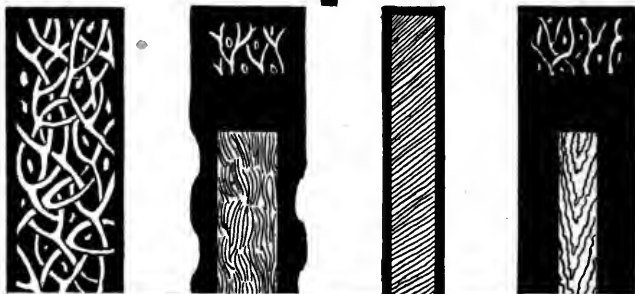
THE NATIONAL PARK SERVICE

Jenks Cameron. D. Appleton and Company, New York. 1922. XII. + 172 pp. Service Monographs of the United States Government. No. 11. Institute for Government Research.

SOCIAL WORK IN THE LIGHT OF HISTORY

Stuart Alfred Queen, Ph.D., Professor of Sociology, University of Kansas. Lippincott's Sociological Series, edited by Edward Cary Hayes, Ph.D., L.L.D., Professor of Sociology, University of Illinois. J. B. Lippincott Company, Philadelphia. 1922. 327 pp. \$2.00.

Servicised Expansion Joints

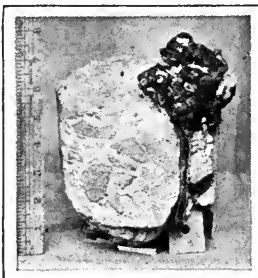


MONITORS OF THE ROAD

Old principles of expansion joint provide fillers of solid asphaltic content or impregnated fibre and asphalt in an elastic mass. ¶ The fundamental purpose of the filler is to re-occupy the space left by two contracting slabs. ¶ Solid asphaltic or impregnated fibrous materials contract, concrete slabs likewise contract on cooling. ¶ Three contracting bodies cannot occupy the same space as when expanded. **Servicised Joints expand** when the concrete slabs contract. ¶ This is the key to a permanent waterproof joint; a correct answer to the problem of expansion between two contracting bodies. Unimpregnated cellular fibrous matter in Servicised Joints brings about this re-expansion after compression is relieved.

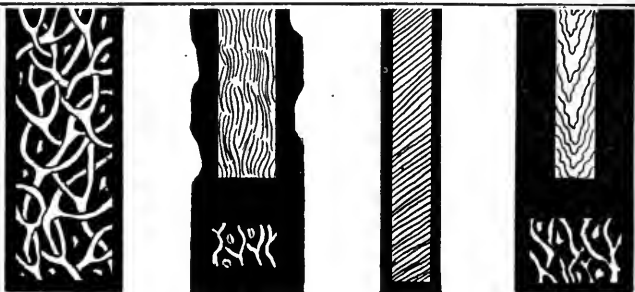
Trapped Under Compression: The print to the right is an example of oozing under compression. Due to the hard asphalt surfacing over the concrete base, the traffic could not carry the surplus away because it was locked in between the asphalt surfacing and base. The force was great enough, however, to form bulges in the hard asphalt surface.

Write Us About Your
Expansion Joint
Problems



A Bituminous and Impregnated Fibre or Elastic Mass: No better proof of indiscriminate oozing. No better illustration of the need of expansion joint of the proper kind. The action in this instance resembles that of paste in a tube being squeezed with one side open. Action of this kind causes tremendous waste, without resulting in good. **Servicised Joints will prevent this.**

Servicised Products Co.
First National Bank Bldg.
CHICAGO



TYPE B
75% Bitumen
25% Cellular Fibre

TYPE D
Self-Expanding
Non-Raising

TYPE C
Felt Center-Coated
Sides-Sidewalk Joint

TYPE AA
3/16 Veneer Core

Four Types of Servicised Expansion Joints



in Which the Oozing Tendency Is Controlled

Servicise the Crevice and Save the Road

Methods, Materials and Appliances

News for City and County Engineers, City Managers, Water-Works Superintendents, City Controllers, Park Superintendents, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

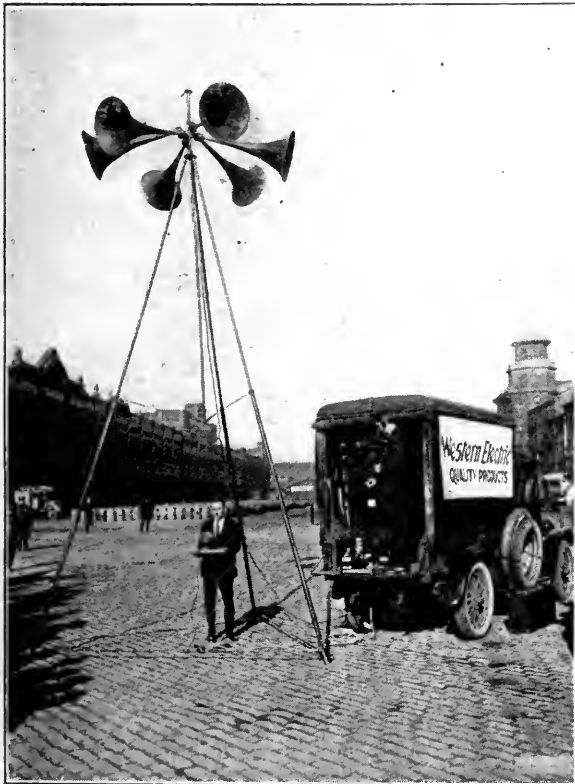
Electrical Device to Aid Speakers' Voices

In the dedication of monuments and in ceremonies such as corner-stone layings, breaking of ground, etc., an outdoor meeting at the site is the usual thing. When the crowd is large, it is frequently difficult for the speakers' voices to reach those standing on the outskirts, especially if there happen to be noises from passing traffic. Knowing this, many people are deterred from attending such gatherings and the annoyance detracts much from the pleasure of those who take the trouble to come. For use on such occasions, the Western Electric Company has developed a system to utilize its loud-speaking sound projectors, by mounting them on a light truck for ready transportation. These projectors are usually installed permanently in parks and auditoriums.

In temporary service, a microphone is placed on the speaker's stand and another near



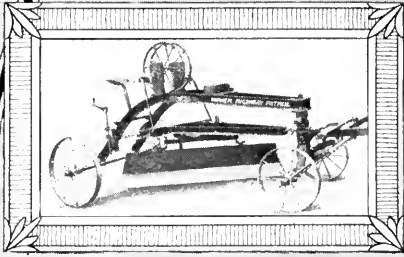
TWO VIEWS OF ELECTRICAL LOUD-SPEAKING DEVICE IN USE



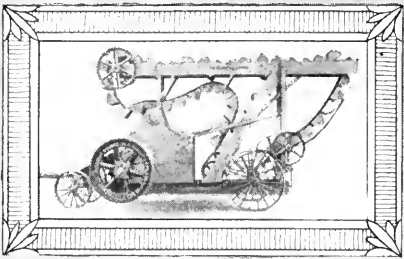
the music. These microphones reproduce the sounds with great faithfulness—an absolute necessity, since the volume of the tiny electric currents is to be amplified many thousandfold. The microphones are connected to vacuum tube amplifiers mounted in the truck. From these, wires lead to the sound projectors, which can be mounted on a tall steel tripod for outdoor use or suspended from the ceiling of an auditorium. The amplifiers are adjusted so that the volume of sound in the remote parts of the audience will not be much greater than that from the voice of a near-by speaker. Thus, the effect of the system is to move the speaker up into close proximity to the listeners, no matter how far away they may be. When this system is placed in operation before the beginning of the program, the audience, as a rule, does not realize that anything out of the ordinary is taking place, and listeners frequently refuse to believe that the loud-speaking projectors are working, until they are cut off and they can compare the volume of sound with that which comes from the speaker's unaided voice.

The illustration shows this outfit in service at the opening ceremonies of the Frankford Extension of the

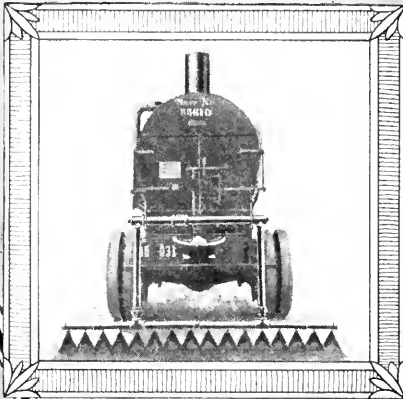
All roads lead to the Chicago Road Show-Jan. 15-19



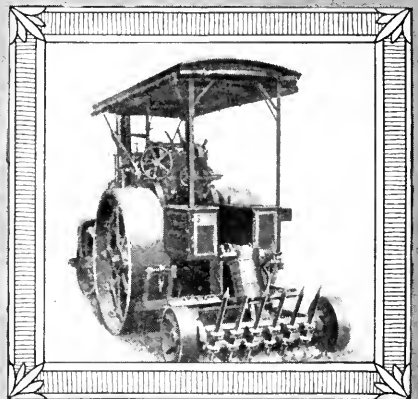
Winner Highway Patrol Road Grader.
We make six different sizes of Winner Grades.



No. 4 1/2 (10 by 20) Champion Steel Rock
Crusher, mounted, with Folding Elevator.



Champion Heating Distributor
For applying all grades of bituminous binders.



Monarch Steam Roller
with Scarifier attached.

Our complete catalogue
"Everything for the Road
Maker" will interest you.
It is free on request.




The GOOD ROADS MACHINERY CO. INC.

KENNETT SQUARE
PENNSYLVANIA

BOSTON, MASS. · NEW YORK, N.Y. · CHICAGO, ILL. · PITTSBURGH, PA. · KANSAS CITY, MO.
PORTLAND, OREGON · PHILADELPHIA, PA. · ATLANTA, GA. · SAN FRANCISCO · LOS ANGELES, CAL.

Elevated Railroad in Philadelphia. It was first set up in Bustleton for a program in which Mayor T. Hampton Moore and other city officials took part. Then the crew of three men packed up the equipment and moved to Frankford, where the apparatus was set up and made ready for the arrival of the Mayor and his party, who came by another route.

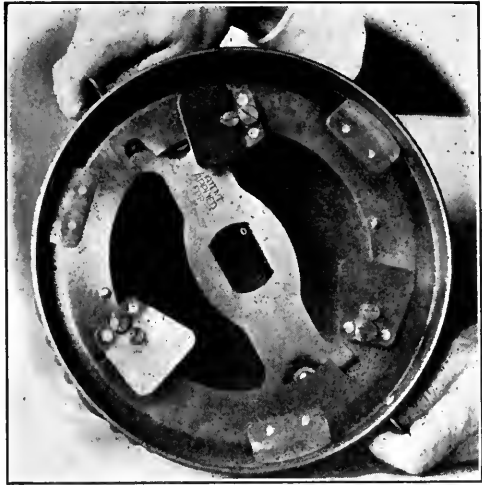
As an example of the versatility of the equipment, a few days later the truck appeared at the American League Baseball Park, Philadelphia, when Sir Harry Lauder made the presentation speech in connection with the conferring of medals on Philadelphia's heroic police and firemen. Other uses which can be made of this equipment are in the handling of crowds at various events, the announcing of election returns, and providing for outdoor overflow meetings at public gatherings; the acoustics of any hall can be greatly helped by the installation of some sound projectors inside the hall, and of others in any clear space outside, for the overflow crowds. Since the words spoken from the sound projectors can be made to travel great distances and be heard in spite of a considerable amount of noise, such a system might be useful in directing firemen or police when they are scattered over a considerable area. The system has been installed in a number of hotels, notably the Commodore and the Astor in New York, where it is available for use in any of the ballrooms in connection with large public meetings.

By the addition of a radio receiving set, this truck and its equipment have frequently been used to receive musical programs broadcasted by radio stations. A notable example of this was at the time of the Chicago-Princeton game, when this particular truck was stationed in a Newark, N. J., park and received the play-by-play story of the game by radio from station WEAf in New York.

Reducing Breakage of Street Lighting Globes

To overcome the excessive breakage of street lighting globes mounted on standards and brackets secured to street railway poles has been a serious problem with station managers and municipal officials for many years. The chief causes of breakage are the ordinary vibration caused by heavy vehicular traffic, sudden shock or impact, the use of screws in securing globes in position, and the lack of care when cleaning globes or making replacements. The Jiffy Globe Holder Company, 39 East Third Street, Cincinnati, Ohio, has developed a screwless globe holder, 1,000 of which are now in use in Cincinnati's White Way system, which practically eliminates all breakage due to the above causes.

This holder consists of two plates which are free to oscillate one above the other. The globe rests on a resilient phosphor bronze seat and is held securely by means of resilient phosphor bronze grips from the inside. The simple movement of the oscillating plate, which is provided with ears with which to grasp it, will open or close the holder, and automatically and



A NEW HOLDER FOR STREET-LAMP GLOBE

securely lock it in position. The holder is made of Armco ingot rust-resisting iron, alloy-coated, and is practically rust-proof. The chief claims made by the manufacturers for this holder are that it is shock-absorbing, taking up both vertical and lateral motion, automatically provides for expansion and contraction, has no screws in contact with the glass and therefore prevents the breakage of globes. It is instantaneous in operation, thereby facilitating cleaning and replacement, and proving a great labor-saving device. It is automatically locked in its closed position and can be opened and closed manually only. It may be used in upright or inverted position, sheds water freely and will not freeze. The manufacturers have devised a similar holder for interior purposes, which is operated by pressing two pins together with one hand while inserting the globe or shade with the other.

New District Sales Manager for Standard Turbine Corporation

The Standard Turbine Corporation, Wells-ville, N. Y., has announced the appointment of E. E. Maher as District Sales Manager in Chicago, with offices at 2237 Insurance Exchange Building. The Chicago office will handle business for the greater part of Indiana, Illinois and Iowa.

The Standard Turbine Corporation, incorporated under the state laws of New York, is manufacturing steam turbines exclusively. J. Y. Dahlstrand, formerly associated in engineering capacities with Allis-Chalmers Manufacturing Company, Westinghouse Electric and Manufacturing Company and Kerr Turbine Company, is Chief Engineer and Manager of the corporation.

Albright & Mebus Move

Albright & Mebus, consulting civil engineers, whose work in the municipal engineering field is well known, have moved their offices to 1502 Locust Street, Philadelphia, Pa.

Concrete Road Building Again Breaks All Records

75,000,000 square yards of Concrete pavement were placed under contract last year—a gain of more than 30 per cent over 1921, the largest previous year.

The construction thus provided for, and to a large extent completed, is equivalent to more than 7,000 miles of 18-foot pavement.

That is a larger amount of Concrete highway than there was in the country altogether up to 1917.

These facts witness the determination of this country to have roads equal to the traffic they bear.

Yet even with this great record, the output of motor vehicles continues to outstrip by far the construction of motor roads.

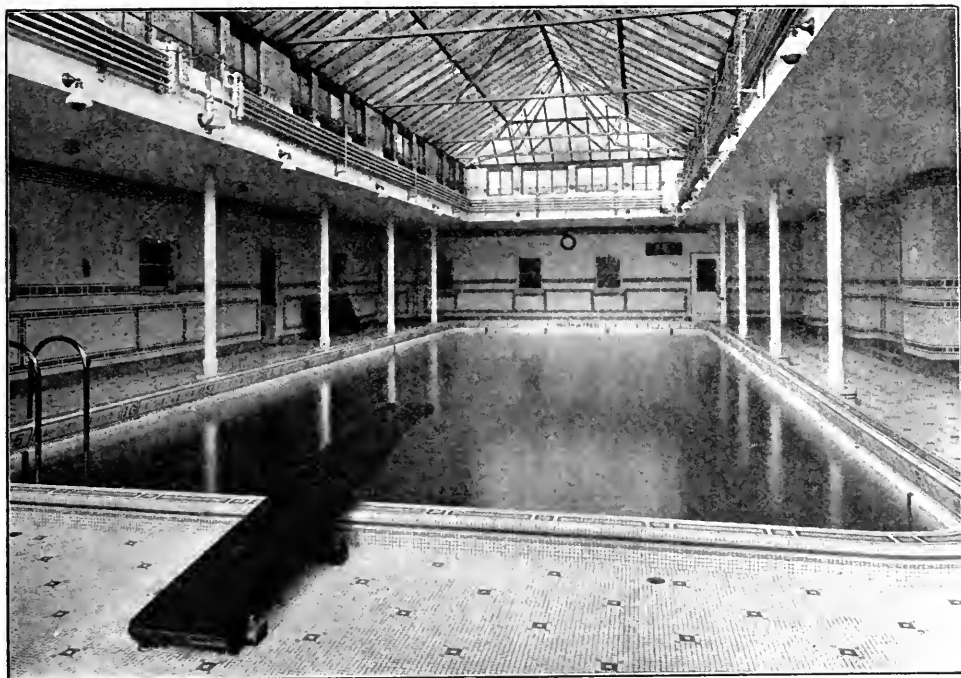
The revolution in road traffic due to the automobile has called for hole-proof, skid-proof, really enduring pavement; and Concrete fills the need.

That is the explanation of the steady, rapid gain in Concrete road construction during the last decade—the largest development in basic transportation facilities in this country in many years.

PORTLAND CEMENT ASSOCIATION

*A National Organization
to Improve and Extend the Uses of Concrete*

| | | | | |
|---------|--------------|-----------------|------------------|-------------------|
| Atlanta | Des Moines | Los Angeles | Parkersburg | San Francisco |
| Boston | Detroit | Milwaukee | Philadelphia | Seattle |
| Chicago | Helena | Minneapolis | Pittsburgh | St. Louis |
| Dallas | Indianapolis | Portland, Oreg. | Vancouver, B. C. | |
| Denver | Kansas City | New York | Salt Lake City | Washington, D. C. |



THE Y. M. C. A. SWIMMING POOL, SPRINGFIELD, MASS., EQUIPPED WITH A THREE-UNIT FILTRATION SYSTEM

Cleanliness of Municipal Swimming Pools

There has been in the past some objection to swimming pools or public baths, the argument being that they were a source of contamination and contagion. Science, however, has come to the rescue, and with the advent of modern filtration and sterilization systems not only is the water kept wholesome, invigorating and clear from one to three years without emptying the pool, but the previous prohibitive cost of trying to do this has been reduced to a merely nominal one. The Norwood three-unit system, developed by the Norwood Engineering Company, Florence, Mass., has been designed to take care of the needs of swimming pools in an expeditious manner.

The maintenance of a clear and uncontaminated pool of water can be obtained only by an inflow of pure water or by the recirculation and refiltration of the water in the pool. The usual practise is to install a circulating pump with connection to the outlet of the pool. This pump picks up the water and forces it through a circulating coil heater with a thermostatic control valve. Then the water is forced through a three-unit system of filters back to the inlet or shallow end of the pool. Previous to heating and filtering, the water is treated with a small amount of sulphate of alumina, which coagulates the coloring matter and forms a film or blanket on top of the sand-bed. This catches all bacteria. After filtering, the water is also sterilized with hypochloride of

lime or liquid chlorine on the way back to the pool. The three-unit system is advantageous, as any one filter unit can be washed by filtered pool water from the other two units by means of the circulating pumps, taking a small amount of water out of the pool for washing the filter and then replenishing the pool with fresh filtered city water and so keeping the pool livened up. Where single or double unit filters are installed, it is necessary to wash these with city water under at least twice its filtering volume in order to thoroughly agitate the sand and carry off the collected matter. No benefit is derived from this city water except for washing the filter, as it is thrown directly into the sewer. With the three-unit system, however, pool water is used to wash the filters and then the pool is replenished with fresh city water.

Simplex Wire & Cable Establishes New York Branch

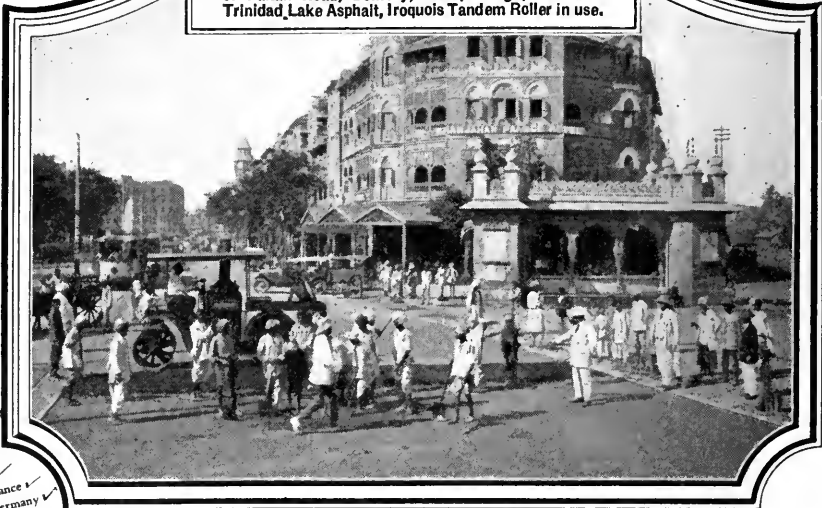
The Simplex Wire & Cable Company, Boston, Mass., on November 1 established a branch office in New York City at 120 West 32d Street, with Joseph G. Brobeck as New York Manager. Mr. Brobeck has sold Simplex wires and cables in the New York territory since March, 1920.

Power-Plant Improvements

We are informed by J. W. Vogel, City Clerk, Ridge Hill, Mo., that Arthur L. Mullergren, consulting engineer, Kansas City, Mo., has been retained by this city to prepare plans and specifications for power-plant improvements.

Around the world on native lake asphalt

TRINIDAD IN BOMBAY Hornby Road, at junction of Paltan Road, Bombay, India, being paved with Trinidad Lake Asphalt, Iroquois Tandem Roller in use.



The standard street-paving material of the world! That's the position *won and now held* by Trinidad Lake Asphalt through its remarkable record of service *under every condition of traffic and climate.*

Thousands of square yards of Trinidad paving—in many parts of the world—are from 30 to 40 years old and *still in splendid condition.* What other bituminous material can even approach this record?

Trinidad Lake Asphalt is a native bitumen—storm-beaten and sun-cured in the tropics for ages. Neither torrid heat nor arctic cold affect its binding and wear-resisting properties. That's why Trinidad pavements *last and last*—why they are the lowest-cost per-year-of-service pavements known.

The purchase of any street paving material should be an investment—not a speculation. Trinidad Lake Asphalt is **TIME-TESTED.** It has proven its value through nearly a half century of service.

Write at once for booklets describing this remarkable, age-old material.



The Genasco Line includes asphaltic roofing, flooring, paints and allied protective products. Write for descriptive matter.

New York
Chicago
Pittsburgh

**THE BARBER ASPHALT
COMPANY**
PHILADELPHIA

St. Louis
Kansas City
Atlanta

TRINIDAD LAKE ASPHALT

The Economical Repair of Old Brick Pavements

Like many other cities in the 10,000 to 25,000 population class, Frankfort, Ind., found itself at the beginning of the year 1922 facing a serious question of street maintenance. The city has 18.7 miles of modern pavement, most of which is brick. The brick was old and in a most unsatisfactory condition for travel because of the many excavations made by the various utilities and in some cases caused by abrasive wear on the surface. After considerable investigation, the city decided to use Kentucky rock asphalt, which resulted in great satisfaction to the city engineering department and also the taxpayer.

Kentucky rock asphalt, produced by the Kentucky Rock Asphalt Company, Louisville, Ky., was applied cold and thoroughly tamped or rolled. Traffic was immediately allowed to pass over the patches after they had been completed. Although the surface of the asphalt appeared rough at first from the tamping or the marking of horses' hoofs and horse-drawn vehicles, it was noted that the asphalt quickly ironed out and compacted even more thoroughly under traffic, until within a few days the asphalt surface was perfectly smooth. The patches could not be distinguished from the hot mix sheet asphalt patches put down in other cities.

Where the hole was deep and of any considerable area, it was first filled with a cement grout to within about 2 inches of the surface. This was done as a matter of economy. If the hole was not sharply defined and it was necessary to feather out the patch, a paint coat was used under the feathered edges. This was done largely as a matter of precaution to absorb or remove any film of dust or dirt on the old brick which might prevent the rock asphalt from bonding. One notable advantage in the use of rock asphalt was the fact that it had a fine sand aggregate like a sheet asphalt mix and could be feathered out to a very thin edge. It has been noted after several months of service that these edges have no tendency to ravel under traffic.

In discussing the work at Frankfort, P. H. Knight, City Engineer, said, "The Jackson, the Ben Hur and the Hub highways all pass through Frankfort. The traffic on these routes is more severe than was expected 25 years ago. Much of our pavement is brick with asphalt filler laid on old macadam. A preliminary survey showed that no repairs were necessary on the concrete or asphaltic concrete streets. The penetration macadam streets were in such bad condition that resurfacing under local assessment would be necessary. The Board of Works decided, on the recommendation of the engineer, to use Kentucky rock asphalt for repairing the brick streets. The water and gas companies asked the city to repair depressions caused by them and bill them for the proportional amount of the total cost. A foreman and five men, a touring car, a trailer and a small roller completed the organization and equipment required. The time, including bad weather

and holidays, was about two months, June and July.

"A total of 24,477 square feet of asphalt was laid, and 1,524 cubic feet of concrete base was placed, with a separate notation by the foreman showing location, size and amount of material at each patch. Practically all parts of the city were visited, which means that 1,800 acres were crossed and recrossed by the gang. Expense for the work was as follows: rock asphalt f. o. b. Frankfort, \$1,719.73; pay-roll, \$1,217.71; cement, \$124.25; gravel, \$74.00; paint coat, \$51.71; hauling, \$45; equipment, \$18.10; gasoline, \$17.07; total, \$3,267.57.

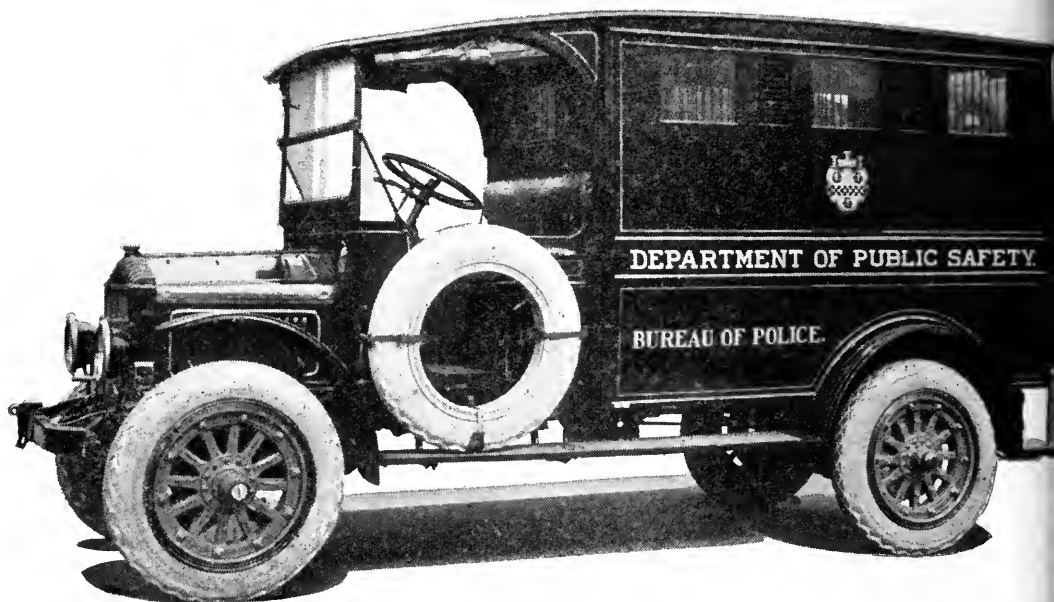
"As is evident from these figures, 48 per cent of the total cost was spent locally. The city paid for 15,262 square feet of asphalt, and the balance of 9,215 square feet of asphalt and 1,524 cubic feet of concrete was paid for by the water, gas, heating and telephone companies. The total cost to the city was \$1,579.44. The Kentucky Rock Asphalt Company of Louisville, Ky., cooperated with the City Engineer, in furnishing engineering advice and a working foreman for two days to start the work, and in keeping in touch with the work at all times."

Disappearing Safety Dome Traffic Light

A new development in the dome or mushroom type traffic light at street intersections has been brought out by the Safety Traffic Light Manufacturing Company, 425 East Water Street, Milwaukee, Wis. This type of traffic guide combines a yielding top, which can be depressed by the contact with the lightest vehicle, with rigid construction, making the signal itself damage-proof.

The outstanding feature of the disappearing dome safety light is its yielding dome or head. This is mounted on a plunger acting like a piston, which in turn is supported by a heavy tapered coil spring, and the dome is so shaped and so mounted that upon the impact of a vehicle as light as a motor-cycle the dome is depressed to a level the same as that of the permanent flange, which is slightly above the street grade. By reason of this movement the vehicle hitting the dome merely depresses it and goes on over, the occupants experiencing only a slight bump. In the meantime the dome, by reason of its spring action, immediately returns to place. The lowering action of the dome and plunger is arrested by a coil cushion spring.

The lighting system of this signal is distinctive in that provision is made for two lights mounted in parallel with their fuses, thus giving a duplex lighting system, wherein if one lamp burns out, the traffic marker will still be lighted. Another important feature is the provision which keeps the light free from moisture and dirt. The top surface of the light is slanted in such a way that every bit of water falling on the light runs off completely. In addition to this, an effective soft rubber packing is provided between the plunger and the barrel of the light so that no water can enter it.



The Garford Police Patrol Wagon

The illustration shows one of a fleet of seven model 25 Garford Police Patrol Wagons, in operation for the city of Pittsburgh.

Municipalities all over the country have found in the Garford Police Patrol Wagon that dependability and economical operating cost so long sought. It meets every demand of police and municipal service—and this means standing up under unusually severe strains.

Notice the clean cut design; the strength that is plainly apparent; the features that make for safety and convenience.

A request will bring literature showing what a profitable investment the Garford Police Patrol Wagon is from the standpoint of first investment, durable service and daily maintenance cost.

The Garford Motor Truck Company, Lima, O.

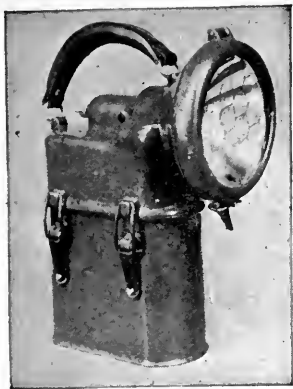
Manufacturers of Motor Trucks 1 to 7½ Tons

GARFORD

DEPENDABLE TRANSPORTATION

An Electric Hand Lantern for Municipal Departments

Fire departments, in their regular work, make great use of lanterns in penetrating rooms in which the smoke is thick. Water departments use them in emergency work at night, electric lighting plants and pumping plants make good use of them when there are night breakdowns. The McNeil & Olson Company, Dayton, Ohio, has placed on the market the Excellight, an electric hand lantern which, it is claimed, combines all the good points of other lanterns and eliminates some of their weak points. The lantern has an aluminum case painted red, and a leather handle which is parallel with the stream of the light—the natural way to hold a lantern, and the bulb is at the top, close at hand. A cowhide shoulder strap can be easily attached and detached. The



A READILY PORTABLE LIGHT

focusing nut is right at the carrying handle, and the push button can also be used by the carrying hand. The top of the case is fastened to the bottom by four snaps, not by screws, making it possible to change the batteries in 30 seconds. The lens is of wire-reinforced glass, so that no pieces of glass can fall out in case of an accident to the lens; if it is broken, it can be readily replaced, as it is on a hinge and is held tight by a snap, so that no screw driver is needed in replacing either lens or bulb. There are no wires to the batteries, the connections being made by copper strips which are always in place. Inside the top are carried two extra bulbs fully protected, so that at all times it is possible to install a new bulb should the one in service fail.

Sargent in Consulting Work

W. F. Sargent, who for the past ten years was the city engineer of Oak Park, Ill., the largest city in the United States operating under the village form of government, is now associated with Arthur L. Webster, civil and drainage engineer, of Wheaton, Ill.

A New Stump Puller

Monarch Tractors, Inc., Watertown, Wis., manufacturers of tractors, have announced the development of a new stump puller, to be operated by tractor power.

Valves for Detroit's New Filtration Plant

The new \$6,000,000 filtration plant which is now being pushed to completion in Detroit, Mich., is expected to be ready for use early in the spring. Except for the sand and gravel, the collection, controlling and handling systems, work on the project is practically finished. When placed in operation, it will give Detroit one of the most modern filtration plants in existence. The construction of the great plant involved the solution of a number of interesting engineering problems. Among these was the construction of the large sluice-gates built by the Michigan Valve & Foundry Company, Detroit, Mich., all of which are made with special fittings.

There are three pairs of gates, measuring 24 x 5 feet, 14 x 8 feet, 6 inches, and 7 x 9 feet, respectively. Each pair embodies distinctive features of interest. The 24-foot gates are the largest leaves of their type in use. Their construction in each instance was made necessary by the fact that the space available for installation was not sufficient to provide the desired opening if double gates were employed. Thus, to obtain the required capacities in the area available, one huge gate was built by bolting together two separate castings. In addition to meeting the engineering problem in hand, this arrangement was also in the interest of operating efficiency.

The 14 x 8-foot 6-inch gates are even larger in area than the 24-foot gates, and are notable in that they are the largest single-casting leaves that have been built. In this instance, two spaces only 18 feet in length were available for installation, making it impossible to employ double gates because of the area that would necessarily be wasted by the concrete walls that would have to be built between them. The problem was solved by designing a single gate, which, in turn, was cast in a single piece. The 7 x 9-foot sluices are automatically operated and are designed to maintain a constant level in the settling-basin. They are the first gates of this character to be installed in this part of the country. In addition to building the sluices, the Michigan Valve & Foundry Company supplied the other special fittings, such as valves, manifolds and laterals.

The Michigan Valve & Foundry Company, Detroit, Mich., has announced that it has purchased the business and assets of the Flower Valve Manufacturing Company, including patterns, designs and patents. The company will continue the manufacture of its line of Michigan hydrants, water-gates, valve-boxes, sluice-gates, indicator posts, tapping sleeves and valves, check-valves, foot-valves and special castings.

Federal Trucks Excel In Municipal Omnibus Service

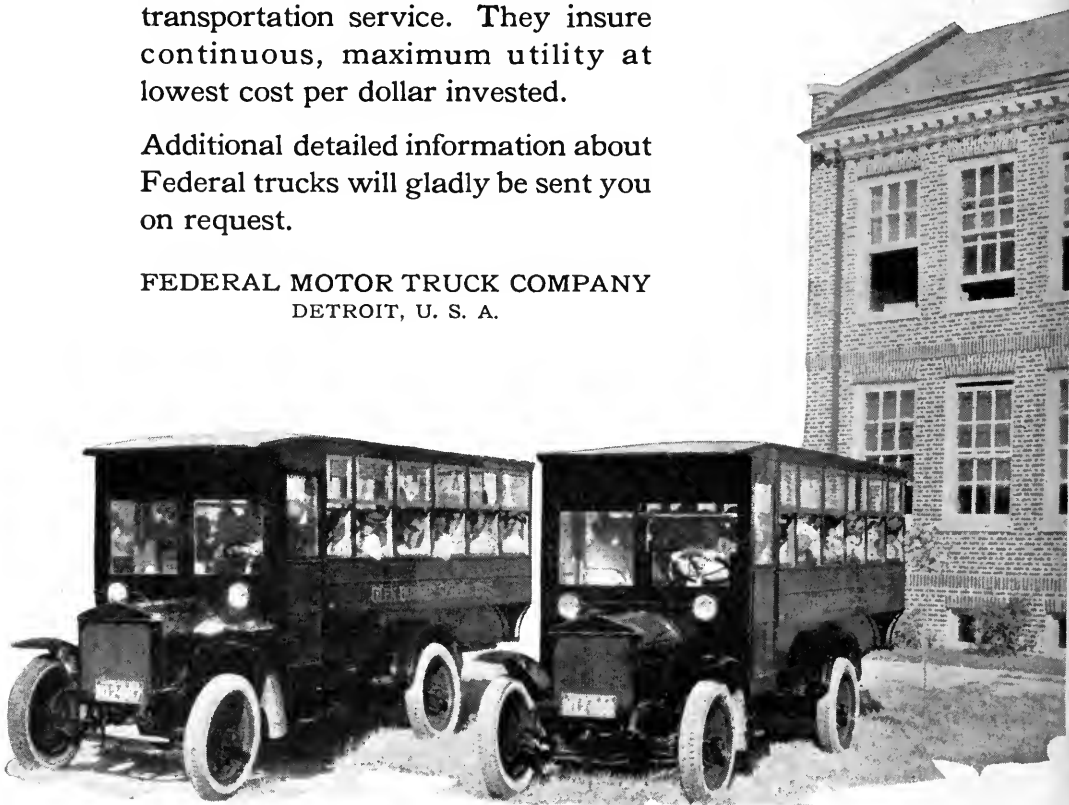
Federal trucks everywhere have proved their worth in omnibus service by their certainty of operation, ease of control, safety, strength, speed and economy.

These vital features of Federal trucks are matters of great importance to municipalities or individuals planning installation of trucks for passenger transportation service. They insure continuous, maximum utility at lowest cost per dollar invested.

Additional detailed information about Federal trucks will gladly be sent you on request.

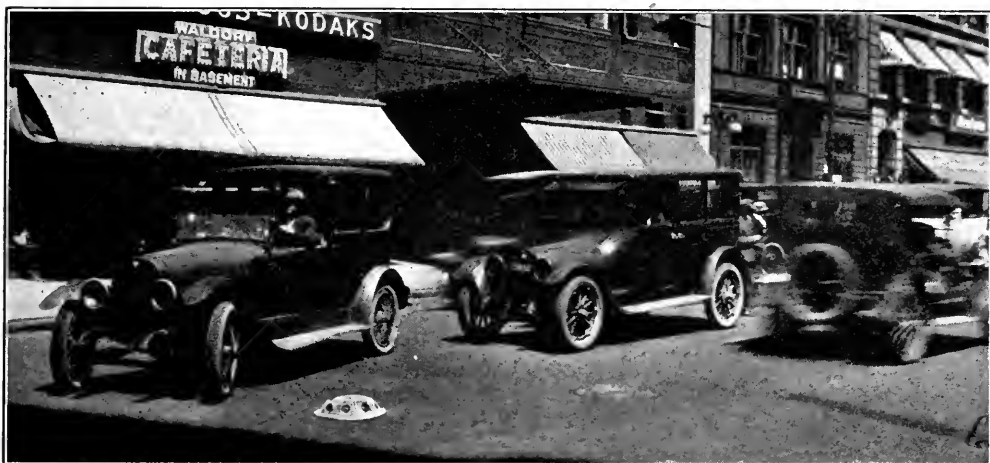
FEDERAL MOTOR TRUCK COMPANY
DETROIT, U. S. A.

Federal trucks are built in all capacities ranging from the Fast Express to a seven-ton tractor



Another

FEDERAL



A SMALL BUT HIGHLY USEFUL DEVICE TO CONTROL CITY TRAFFIC

The Automatic Regulation of Traffic at Street Corners

Among the notable developments in signaling devices for handling street traffic and preventing accidents is the Lehman traffic guide, made by the Elkhart Foundry & Machine Company, Elkhart, Ind. This traffic guide rests upon the street surface and stands only $5\frac{1}{2}$ inches above the pavement. It has a base 23 inches in diameter, unless it is to be specially placed on a manhole already located, in which case it is made in other suitable diameters. The device is cast in one unit and has ten $\frac{3}{4}$ -inch ruby lenses. The hand-hole cover is readily removable. In installing this device, it is imbedded in concrete. The casting is strong, being made of gray iron, and weighs 145 pounds in place.

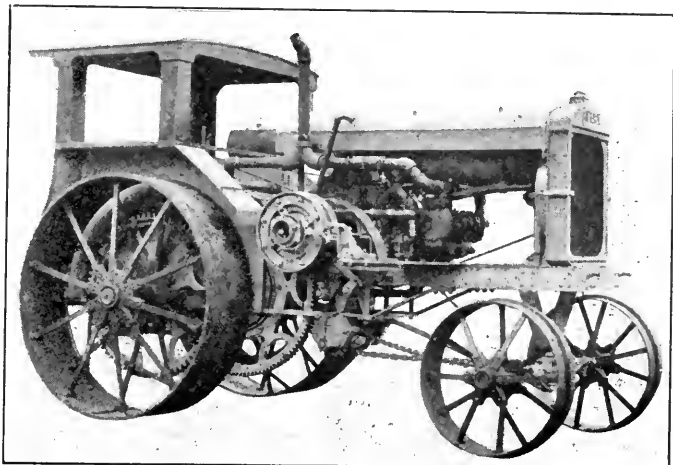
The bull's-eye lights are conspicuous enough to attract the eye of a motorist at an ample distance, day or night. It is claimed that the guide is not damaged by the heaviest loaded truck, nor does it in any way injure a vehicle which is accidentally driven over it. The ten lenses are lighted at night by two 60- or 75-watt bulbs.

An Improved 25-50 Horse-Power Tractor

For a number of years, the 25-50 size tractor has been one of the most popular tractors of the wheel type for road building. With the advent of the improved Avery 25-50-horse-power tractor, made by the Avery Company, Peoria, Ill., the popularity of this size will probably be increased.

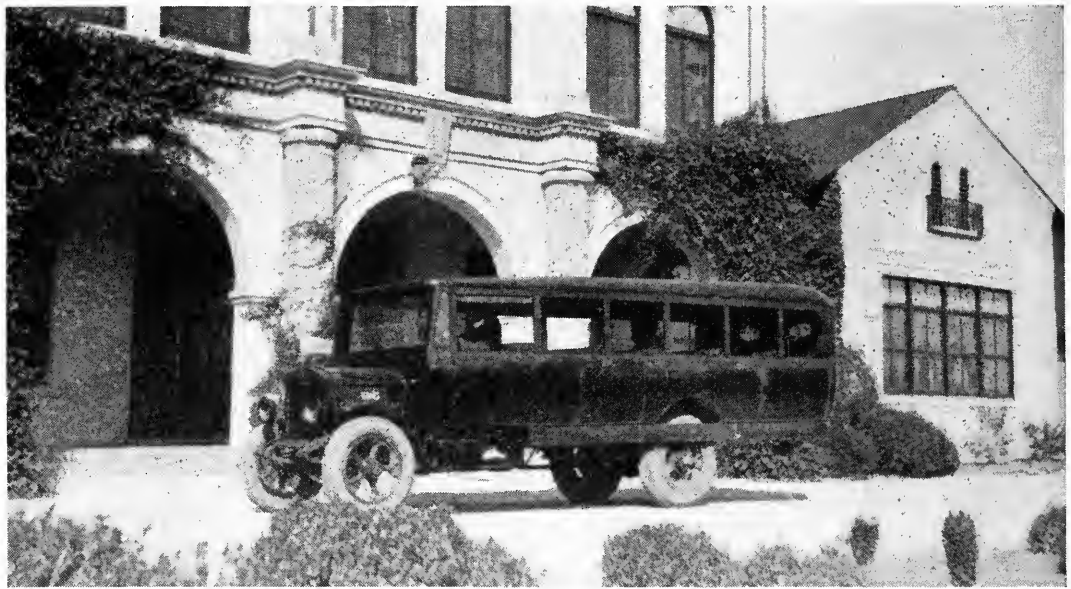
It is claimed that this new 25-50 tractor handles a 20-foot road grader with ease. Among its new features are increased power, the adoption of a new cooling system with a cellular radiator, water pump and fan, and also the Madison-Kipp mechanical lubricator for oiling the motor. The four-cylinder horizontal Avery motor, with which it is equipped, has an inch longer stroke and is now $6\frac{1}{2}$ -inch bore by 8-inch stroke. It has the usual features found in the Avery tractor motors, namely, valve-in-head, renewable inner cylinder walls, centrifugal gasifiers for burning kerosene, adjustable main crank-shaft bearings, extra strong crank-shaft. It also has the direct-drive transmission, with the belt pulley at the end of the crank-shaft and the draw-bar pull through all straight spur gears.

Tractors of this type are now in the hands of many counties and contractors, giving satisfactory service.



A 25-50 TRACTOR THAT EASILY HANDLES A 20-FOOT ROAD GRADER

General Motors Trucks



One of Fleet of Four GMC Busses Used by Schools of Puente, California

GMC Wins Place in Competition

The City of Puente, California, is not very large as viewed from the standpoint of the census figures. The corporation registers but a little more than a thousand souls. But Puente is the center of the wonderful valley of the same name, one of the most beautiful garden spots in all of Southern California.

All of the school in Puente are "union schools", for the three grammar institutions and the fine, modern high school provide the educational advantages for most of the valley.

Naturally, in serving such a great area, the schools had to make suitable provision for the transportation of the students. And in working out this phase of educational activity, the experience of Puente is very like that of other communities in this section of the country.

The first plan tried was that of contracting for the haulage of the children, but this plan was soon

abandoned for the reason that the contract drivers did not give satisfactory service and did not maintain the proper friendly relations with their passengers.

Next the school board experimented with light, cheap, busses. The up-keep on these equipments made them prohibitive, as well as the fact that they could not be depended upon to collect and deliver the children according to the school schedule.

The next step in the progressive climb came when the school board decided to quit experimenting with cheap equipment and purchased a one-ton GMC truck bus after making some severe competitive tests with a number of different makes. Since that time the transportation troubles of the Puente school system have become but a memory, according to Chairman Blees of the Board of Trustees.

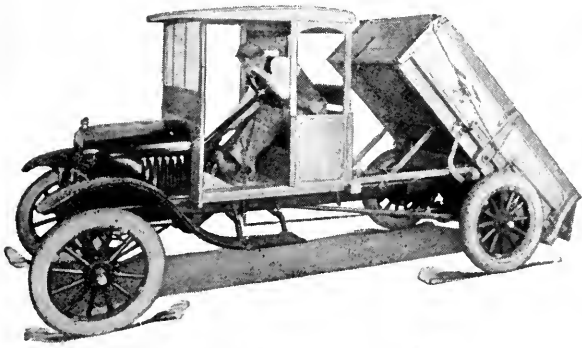
GENERAL MOTORS TRUCK COMPANY

Division of General Motors Corporation

Pontiac, Michigan

DEALERS AND SERVICE IN MOST COMMUNITIES

When writing to Advertisers please mention THE AMERICAN CITY.



DUMPING A ONE-TON LOAD

A Universal One-Ton Dump Body for Municipal Departments

In developing a dump body which can be used universally for almost all types of municipal work, the Eagle Wagon Works, Auburn, N. Y., has performed a distinct service for municipalities. Into the design of this body has gone nearly 20 years of experience in the manufacturing of various kinds of dumping equipment for cities and contractors.

The new body, illustrated above, is operated entirely from the seat. The adjustment of the dump body can be handled so nicely that it is possible to dump it in three seconds or in three minutes, thus making it possible to spot a load at one point or to distribute it uniformly over a considerable area. The tail-gate is arranged to open and close automatically when the body is dumped, and the body can be slowed and stopped at any point while it is dumping, by means of a foot-brake. It can also be locked at any point to give a uniform delivery of the material on the road or grading job.

While the extreme angle of the dump body is 60 degrees, it can be adjusted to stop at any angle of dump desired up to this amount. The body is furnished with partitions so that a two-batch load can be carried if desired, or one portion of the body can be used for carrying one kind of material and the other portion, another, thus making the truck available for many kinds of work.

This body, which is no heavier than an ordinary rack stake body, may be used as a regular open express body or to carry wet materials or such loads as stone, gravel, sand, coal, or other similar material.

Power Mowers for Municipal Parks and Golf Courses

One of the difficult problems faced by park officials is that of keeping the large stretches of lawn in their parks and public golf courses properly mowed. This problem is successfully and efficiently solved to-day, however, by the use of Ideal power lawn-

mowers, made by the Ideal Power Lawn Mower Company, Lansing, Mich.

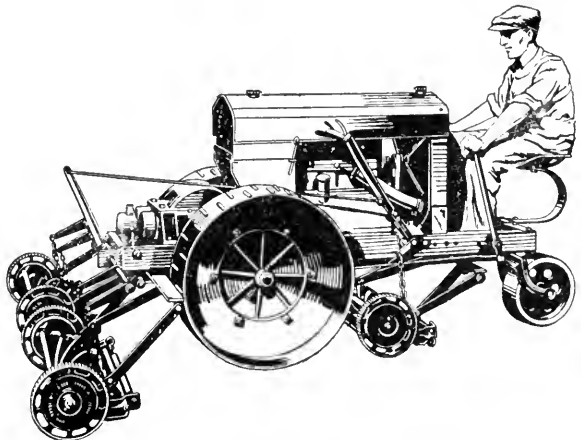
There is an Ideal mower for every need. For very close quarters and small lawns there are the 16-inch and 18-inch Wolverine hand mowers. Next comes the 22-inch Ideal Junior power mower, which cuts $\frac{1}{2}$ -acre hourly. Then comes the 30-inch, which cuts $\frac{3}{4}$ -acre hourly and is perhaps more generally used in parks of the average size. And last, for the vast areas, there is the Ideal Power Triplex 84-inch, which cuts more lawn in a given time than any other mower on the market.

A riding trailer is provided as an attachment for the 30-inch mower, which adds greatly to the comfort of the operator and to his convenience in handling. It is attached with a king-bolt and can be taken off in a moment, should the operator become tired of riding. The traction unit serves as a roller. This roller consists of three separate castings, the center one keyed to the shaft, and the outer rollers run loose on the shaft, permitting the mower to turn easily in a small space.

The Ideal Power Lawn Mower Company has announced that it appreciates the necessity of having service facilities in the general territory in which New York City is located. On January 1 a branch office and service station was opened at 13-19 Hudson Street, New York City, with W. I. Alling as Manager. This new office and service station places this company in a position to give better attention to its machines in use in and about New York City and throughout the East.

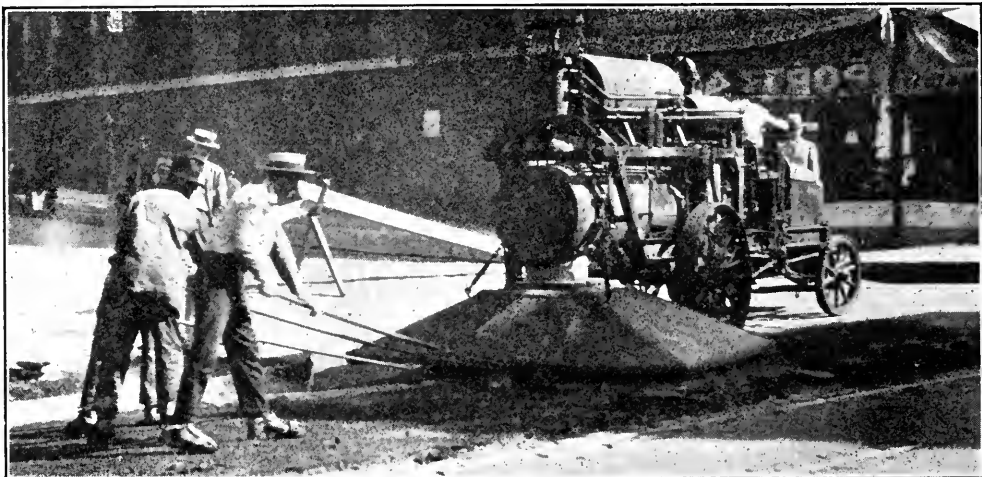
Increased Trust Company Resources

Substantial increases in trust company resources, both for New York State and the country, are shown by "Trust Companies of the United States," the annual publication of the United States Mortgage & Trust Company, 55 Cedar Street, New York City, just issued for 1922.



TRIPLEX POWER MOWER FOR GOLF CLUBS, PARKS AND LARGE ESTATES

MAKE BETTER ASPHALT STREET REPAIRS



The Improved Lutz Surface Heater Softens 1500 Square Yards a Day

Proper bonding of old and new asphalt is made possible by this fool proof machine which requires hot water to operate. The heating hood slides on the ground saving time and heat. The machine heats 45 square feet of pavement in 1 to 2 minutes and moves quickly ahead. Send for our new prices and specifications.

THE EQUITABLE ASPHALT MAINTENANCE COMPANY
 1901 Campbell Street Kansas City, Mo.



Wearproof Signs and Street Name Plates

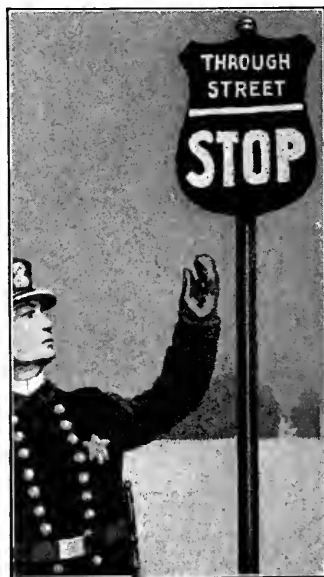
also

Public School and Quiet Zone Signs, Turtle Back Traffic Guides, and Automatic Danger Signals.

Write for Catalog.

UNION IRON PRODUCTS CO., East Chicago, Indiana

DRAWER H



**THROUGH STREET STOP SIGN
 USED BY CITY OF CHICAGO**



LOADING PLOWED GROUND INTO A DUMP-TRUCK IN STRIPPING A COUNTY QUARRY

Ingenious Use of Road Machinery

Early last fall, A. R. Russell, County Superintendent of Highways, De Kalb County, Ill., purchased a wagon loader for loading crushed rock from the stock piles formed at his crusher. As he did not have a steam shovel and was able to get the loader before his crusher arrived, the loader was put to work stripping the quarry. This is an excellent example of the ingenious methods county engineers and superintendents often use to make their appropriations for equipment more elastic. This loader, made by the Barber-Greene Company, Aurora, Ill., proved so successful in stripping that Mr. Russell is planning to use it for widening cuts and similar work where an elevating grader might ordinarily be used, at such times as he can spare it from loading work at the crushed rock pile.

In using the loader in stripping the quarry, the ground was first plowed, sometimes with a team and plow, and at other times with a truck and plow when a team was not available. After the ground was plowed, the loader was jammed into the dirt, as illustrated. The loader maintained a rate of 150 to 200 cubic yards a day. On the best day, one man and the loader filled 104 trucks in 10 hours. Each truck had a capacity of 2 cubic yards, but in this case the trucks were loaded high and were well trimmed. Figuring that each truck carried $2\frac{1}{4}$ cubic yards, the 104 loads amounted to about 236 cubic yards. A greater rate could have been maintained had not the hauls been quite long. Often, the trucks made a haul as long as 5 miles. Mr. Russell figured that it would be cheaper to use this dirt which he could get loaded quickly than to try to get the material

nearer the fills. Fills in all parts of the county were made on the road with this material secured from stripping.

Many hard lumps were left after the plowing. Had the ground been pulverized, it would have been possible to load with much more facility. The feeding action of the patented disc feeder attached to this loader materially assisted in securing the excellent results obtained. The feeder consists of two 36-inch flat steel discs which are located one at each side of the bucket and rotate toward the bucket, bringing the material to the elevator and at the same time digging a path into which the crawlers may follow.

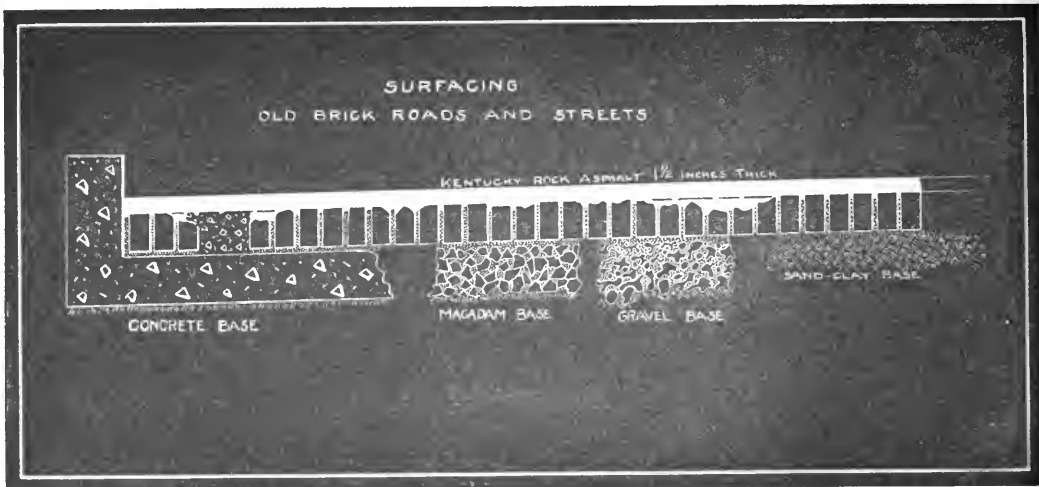
The following costs, without depreciation, figured for the best day the loader was used, are given below. These figures indicate clearly that the machine managed to do this unusual work at a reasonable cost.

| | |
|---|--------------|
| 10 gallons gasoline for loader at \$.212 per gallon | \$2.12 |
| 2 quarts of oil for loader at \$.25 per quart.... | .50 |
| 1 operator for loader at \$.45 per hour..... | 4.50 |
| | <hr/> \$7.12 |

Cost per cubic yard = $\$7.12 \div 234 = \$.03$.

Water-Works to Develop Woodland as Park Area

The 80-acre tract of woodland and meadow surrounding the pumping-station of the Greenwood water and electric light plant, Greenwood, S. C., is to be enlarged by several acres and developed into a park and playground at a cost of over \$100,000 within the next five years. The plans have been prepared by George Burnap, park and town planner, 808 Seventeenth Street, Washington, D. C.



More Miles of Better Streets

Actual experience is proving the value of re-constructed streets and highways. Although the first cost is often less than one-half, these re-constructed or re-surfaced pavements are, often, giving even better service than a complete new construction. Time and traffic have thoroughly compacted the old street or roadway and have developed any weak spots, so that the new surface may be applied without the risk of failure.

The principle of re-construction is now generally recognized by engineers and officials. The demand for more miles of high-type streets and highways, and the urgent need of restoring worn out pavements, coupled with the protest against increased taxation, is fast making re-construction a universal practice.

* * *

Most successful results have been obtained with asphalt surfacing, particularly in cities and on highways adjacent to cities having hot mix asphalt plants. In the smaller cities and on isolated highway projects fairly satisfactory work has been done with the inferior types of bituminous surface, although the maintenance on such pavements has proven costly. The old compacted macadam or gravel, or the worn out brick or concrete pavement, has proven most excellent foundations. The question facing the engineer is the choice of the best and most economical type of asphalt surface.

Kentucky Rock Asphalt has solved this

problem to the enthusiastic satisfaction of many states and scores of cities. The use of this perfect sheet asphalt mix is not restricted by location. No asphalt plant is required. The rock asphalt comes ready mixed by nature and ready to lay COLD on any base sufficient to carry the traffic. The material is not susceptible to damage from the weather. It is shipped in open top cars and may be hauled any distance and stored along the work without injury. Kentucky Rock Asphalt is particularly economical because no binder course is required, as in the case of hot mix sheet asphalts.

Kentucky Rock Asphalt makes a perfectly smooth surface, which may not be distinguished from the best sheet asphalt construction. Unlike the hot mix types, Kentucky Rock Asphalt does not lose its life. Samples of rock asphalt pavements in use more than twenty years show no loss of life. The rock asphalt surface does not crack, roll, buckle or bleed. It will not rut under traffic even in the hottest weather. Kentucky Rock Asphalt is giving uniformly successful results at Chicago, Detroit, New Orleans, Miami, Florida, and in the intervening territory.

* * *

Maintenance of Kentucky Rock Asphalt surfaces is negligible because the asphalt does not crack or lose its life. Cut or break the surface today and tomorrow it will be healed by traffic.



Volume

XXVIII

Number 2

The American City Magazine

New York

February

1923

Art and Ideals in War Memorials

FROM chamber of commerce secretaries, the American City Bureau has been receiving during the last six weeks reports of the war memorial movement in 389 of the 746 cities in the United States having a population of 10,000 or more. Reports have also been received from 10 Canadian cities of corresponding size, and from 98 cities of less than 10,000 population.

Of the 497 cities from which responses have come, 144 have memorials completed or under way, 150 have projects under consideration, and 203 report that no action has been taken. The types of memorials erected or proposed are shown by the following tabulation:

| Type of Memorial | Completed or Under Construction | Proposed |
|---------------------------|---------------------------------|----------|
| Memorial Buildings..... | 51 | 58 |
| Parks | 14 | 7 |
| Monuments and Statues.... | 26 | 7 |
| Trees | 8 | .. |
| Bridges | 5 | 3 |
| Tablets | 28 | 6 |
| Miscellaneous | 12 | 8 |

Memorials under consideration—type not determined—61.

No action taken—203.

In September, 1918,—several weeks before the armistice was signed,—THE AMERICAN CITY Magazine suggested that memorials of the World War might well take the form of structures which would help the living while commemorating the dead. More than four years have elapsed since the armistice—years of unsettled conditions, industrial and financial. But though many ambitious plans have had to be abandoned or postponed, the progress already made has disclosed much higher standards of artistic taste and civic ideals than characterized previous post-war periods. If the ghost of a certain foreign guest of former days were to

revisit America and inspect our memorials of the World War, he could hardly say of them, as he did of the Civil War memorials, "Now I know what you Americans mean by the horrors of war."

It is significant that of the memorials completed, under construction or proposed, a larger number take the form of buildings than of any other type. Of these memorial buildings, the kind of structure, the cost, and the method of financing in each case are listed on the next page.

Said the late Franklin K. Lane in a letter written to the mayors of American cities in 1919:

"The war has shown, in the camps and camp cities, the great value of adequate facilities for fellowship and public recreation. Now that the men are returning home, they should have the opportunity through the coming years to perpetuate the democracy of the camps and to share with their fellow townsmen, in a suitable building, facilities for discussion of local and national problems and for community singing, drama, indoor athletics and other forms of wholesome recreation."

In many cities where the consideration of memorial projects has been postponed, the recent recovery from the business depression of the last two years will make possible the reconsideration of the subject during 1923. In such communities, THE AMERICAN CITY believes that the most effective appeal that civic leaders can make for an adequate and artistic memorial is the appeal to commemorate, not the victory over a prostrate foe, but the idealism with which the American forces were inspired during the World War and on the ultimate realization of which depends the hope of a just and lasting peace between the nations of the world.

MEMORIAL BUILDINGS OF THE WORLD WAR

(COMPLETED OR UNDER CONSTRUCTION)

How
Financed*

(PROPOSED)

| City and Type of Building | Cost |
|---|-----------|
| Alpena, Mich.—Memorial Hall..... | \$150,000 |
| Amarillo, Tex.—Municipal Auditorium.... | 260,000 |
| Atchison, Kans.—Convention Hall..... | 200,000 |
| Bakersfield, Calif.—American Legion Home | 30,000 |
| Bartlesville, Okla.—Hospital..... | 200,000 |
| Belleville, Ont.—Memorial Hall..... | 25,000 |
| Binghamton, N. Y.—American Legion Home | 100,000 |
| Brunswick, Ga.—School..... | 175,000 |
| Butler, Pa.—Hospital..... | 500,000 |
| Carthage, Mo.—Memorial Hall..... | 150,000 |
| Chatham, Ont.—Wing to General Hospital. | 105,000 |
| Chattanooga, Tenn.—Auditorium..... | 1,000,000 |
| Claremont, N. H.—Wing to Hospital..... | 75,000 |
| El Dorado, Kans.—Auditorium and Legion Quarters..... | ..... |
| Endicott, N. Y.—American Legion Building | ..... |
| Fort Smith, Ark.—American Legion Home. | 20,000 |
| Gloucester, Mass.—American Legion Home. | ..... |
| Hoquiam, Wash.—Office and Lodge Building | 150,000 |
| Idabel, Okla.—American Legion Building... | 10,000 |
| Independence, Kans.—Convention Hall..... | 280,000 |
| Jamestown, N. Y.—American Legion Build- ing..... | ..... |
| Kankakee, Ill.—K. of C. Club House..... | 150,000 |
| Kansas City, Kans.—Auditorium..... | 500,000 |
| Kansas City, Mo.—Memorial Buildings and Shaft..... | 2,000,000 |
| Kewanee, Ill.—American Legion Building... | 25,000 |
| Kingsburg, Calif.—American Legion Home | 20,000 |
| Lemoore, Calif.—American Legion Home... | 20,000 |
| London, Ont.—Children's Hospital..... | 280,000 |
| Lowell, Mass.—Auditorium..... | 1,000,000 |
| Macon, Ga.—Municipal Auditorium..... | 600,000 |
| Manhattan, Kans.—Community House..... | 40,000 |
| Middletown, Ohio—Community Building... | 300,000 |
| Natchez, Miss.—Community Hall (Rebuilt) | 10,000 |
| Olympia, Wash.—American Legion Auditor- ium..... | 40,000 |
| Pomona, Calif.—Y. M. C. A. Building.... | 305,000 |
| Richmond, Calif.—Memorial Building..... | 100,000 |
| St. Maries, Idaho—Memorial Hall..... | 20,000 |
| Salina, Kans.—Auditorium..... | 300,000 |
| San Bernardino, Calif.—Municipal Audi- torium..... | 225,000 |
| Saratoga Springs, N. Y.—Memorial Building | 26,000 |
| South Manchester, Conn.—Hospital..... | 195,000 |
| Stockton, Calif.—Auditorium..... | 600,000 |
| Sunbury, Pa.—American Legion Home.... | ..... |
| Thonassville, Ga.—Addition to Hospital... | 10,000 |
| Vancouver, Wash.—American Legion Build- ing..... | 70,000 |
| Virginia, Minn.—Memorial Building..... | 400,000 |
| Waukegan, Ill.—Hospital..... | 300,000 |
| Weston, W. Va.—Library Legion Home and Community Center..... | 50,000 |
| West Palm Beach, Fla.—Library..... | 30,000 |
| Whiting, Ind.—Community House..... | 650,000 |
| Wilkes-Barre, Pa.—American Legion Home | ..... |

| City and Type | |
|--|--|
| Abilene, Tex.—American Legion Hall | |
| Alexandria, La.—Municipal Auditorium | |
| Ashland, Wis.—Auditorium | |
| Attleboro, Mass.—City Hall and Auditorium | |
| Aurora, Ill.—Memorial Building | |
| Bridgeport, Conn.—Veterans' Club House | |
| Burlington, N. J.—Memorial Hall | |
| Butte, Mont.—Auditorium | |
| Carlisle, Pa.—Community Building | |
| Cincinnati, Ohio—Veterans' Building | |
| Clarksburg, W. Va.—Community Building | |
| Coffeyville, Kans.—Memorial Building | |
| Columbus, Ga.—Auditorium | |
| Corning, N. Y.—Community House | |
| Corry, Pa.—American Legion Rooms | |
| Council Bluffs, Iowa—Comfort Club and American Legion Home | |
| Crawfordsville, Ind.—Hospital | |
| Elizabeth, N. J.—City Hall | |
| Fort Wayne, Ind.—Coliseum | |
| Gardner, Mass.—City Hall | |
| Greenwich, Conn.—High School | |
| Hannibal, Mo.—Assembly Hall | |
| Hemet, Calif.—Club House | |
| Hudson, N. Y.—Community Building | |
| Huron, S. Dak.—City Auditorium | |
| Indianapolis, Ind.—National Headquarters of American Legion | |
| Iowa City, Iowa—Student Club and Social Center | |
| Jackson, Tenn.—Auditorium | |
| Joplin, Mo.—Convention Hall | |
| Kalamazoo, Mich.—Veterans' Home | |
| Kearney, Nebr.—Municipal Auditorium | |
| Kenton, Ohio—American Legion Club House | |
| Key West, Fla.—Community Building | |
| Lima, Ohio—City Hospital | |
| Long Beach, Calif.—Auditorium | |
| Louisville, Ky.—Auditorium | |
| Madison, Wis.—Auditorium | |
| Marshalltown, Iowa—Memorial Building | |
| Marysville, Calif.—Auditorium | |
| Maryville, Tenn.—Hotel | |
| McKeesport, Pa.—Memorial Hall | |
| Norfolk, Va.—Municipal Auditorium | |
| Oelwein, Iowa—Community Building | |
| Pensacola, Fla.—Memorial Building | |
| Plymouth, Mass.—Memorial Hall | |
| Quincy, Mass.—Armory | |
| Racine, Wis.—Memorial Building | |
| St. Marys, Pa.—Community Building | |
| Salem, Ohio—Community Building | |
| Sandpoint, Idaho—Community Hall | |
| Sault Ste. Marie, Mich.—Hospital | |
| Steubenville, Ohio—Memorial Building | |
| Suffolk, Va.—Library | |
| Tampa, Fla.—Memorial Building | |
| Traverse City, Mich.—Memorial Hall | |
| Trenton, N. J.—Assembly Hall | |
| Wakefield, Mass.—Memorial Building | |
| Warren, Ohio—Community Building | |

* P.—Public Funds; S.—Private Subscriptions; P.&S.—Com-
bination of both methods.

Many lovers of nature have advocated parks and trees as living memorials of the great conflict. This suggestion has taken definite form among the cities reporting, as follows:

PARKS

COMPLETED OR UNDER
CONSTRUCTION

Orange, Mass.
Texarkana, Tex.
Webb City, Mo.

PROPOSED

Amsterdam, N. Y.
Blue Island, Ill.
Conneaut, Ohio
Great Barrington, Mass.
Hornell, N. Y.
Newark, Ohio
Uvalde, Tex.

TREES

Coshocton, Ohio.....One mile of trees planted at
entrance to city.
Findlay, Ohio.....One tree planted for each
dead soldier.
Grand Haven, Mich....29 red oak trees planted in
park, one for each dead sol-
dier from Ottawa County.
Hartford, Conn.....One tree planted in park for
every person who died in
service.
Minneapolis, Minn....Drive bordered by elm trees,
each one dedicated to a dead
soldier.
Ogden, Utah.....Trees planted on memorial
driveway.
Pontiac, Mich.....Trees planted on twenty-five-
mile memorial highway, one
tree dedicated to each dead
soldier from the county.
Tulsa, Okla.....White elm trees planted on
memorial driveway in honor
of every man from the state
who died in service.

Should a City Contract for Public Improvements or Do the Work with City Labor?

By Edward A. Beck

City Manager, Lynchburg, Va.

"**M**ORE business in government" is a slogan that all of us have heard in some form, at some time in some local, state or national campaign. Yet many staunch supporters of this slogan hesitate when governmental business policies lead beyond the paths beaten by customary practise. Each city regards any change from its established routine as an experiment, even though like departures have met with unqualified success in numerous other municipalities.

Municipal shops for the repair of equipment used in the daily performance of certain public functions are common, but there remain cities where the propriety of such an undertaking is being gravely debated. A few municipalities still cling to the practise of contracting for minor additions to their water systems, even though their own organizations are equally, if not more, competent to perform such work, than is the average contractor. While most municipalities have recognized the advantage of abandoning the contract system for the construction of the ordinary improvements connected with their utilities, there are few, if any, which do not question the advisability of a like policy for other public works

such as sewer installation, street paving and the numerous other betterments commonly handled by contractors.

It is suggested that it is unfair for the city to compete with private business and deprive taxable enterprises from profits ac-

cruing from public improvements. As a matter of fact, there is no competition, although a potential source of profit is removed. On the other hand, it is manifestly unfair to the taxable citizenship as a whole to give a selected few an opportunity for profit denied to others, which must be paid in the tax bills of many.

Again, it was said that the building of public improvements by municipal forces would lack the incentive for prompt and energetic execution of work characteristic of the successful contractor, and thus result in much public inconvenience due to pro-

longation of the construction period. This, of course, is an accusation of governmental inefficiency, which, if true, is equally applicable to every public function. If the argument were founded on fact, then it would seem that sound business policy would demand a discontinuance of those municipal operations which have almost universally been accepted as a proper sphere

A Few of the Questions Answered in This Article

Does it pay to abandon the contract system for the construction of the ordinary improvements connected with municipal utilities, such as sewer installations and street paving?

Is it unfair for a city to compete with private business and deprive taxable enterprises of profits accruing from public improvements?

Does the building of public improvements by municipal forces lack the incentive for prompt and energetic execution of work characteristic of the successful contractor?

Is work done by the city more costly than when performed by private agencies organized and equipped for that purpose?

What are the relative advantages and disadvantages of municipal construction?

Can a city department effectively handle work of considerable magnitude for street and sewer departments?

Who loses, the city or the contractor, when prices drop after work has started? When prices increase after work has started?

of governmental activity. Street sweeping and refuse collection are examples of services which can be performed under contract, but are now rarely handled in that manner.

Probably the most plausible argument against the policy under discussion is that work so handled would be more costly than when performed by private agencies organized and equipped for that purpose. This argument is supported by the experience of a number of cities where emergency improvements have been undertaken by their own forces without adequate organization or necessary equipment. As a matter of fact, organization and equipment, plus financing, are controlling factors in the success of any enterprise. There is no good reason why a city cannot secure both an organization and an equipment equal to that of any contractor. Certainly most cities have an advantage over the average municipal contractor when it comes to ability to finance any operations they undertake.

Careful consideration of this argument develops the conclusion not alone that it is fallacious, but that on the contrary a city has at least the potential ability to construct public works at an expense, not only less than would be required under the contract system, but even less than the contractor's actual cost.

In support of this statement let me offer the following facts, which I believe are beyond dispute:

1. Both a city and a contractor have the same field from which to recruit an organization.
2. Both have the same markets from which to procure equipment.

In these two respects neither has an advantage.

Now as to materials entering into the actual improvement. While both parties have available the same markets, the city has certain definite and substantial advantages:

1. Its credit is established, which insures prompt deliveries.
2. Its financial resources are sufficient to enable it to take advantage of cash discounts, whereas the average contractor pays his bills on receipt of monthly estimates from the city. Last year Lynchburg benefited over \$2,500 from cash discounts on material purchased for its public improvements.
3. With their credit beyond question, cities can purchase various materials at a lower gross cost than the average contractor.
4. Freight rates favor direct deliveries to

municipalities on certain classes of road-making material. In Virginia, a reduction of 10 cents per ton is allowed from the regular rates on shipments originating within the state. On last year's construction, Lynchburg received a credit from this source of exactly \$617.70.

Other similar savings might also be mentioned. Although the amounts are comparatively small in each instance, yet the aggregate is large.

In the matter of operating expense, the city likewise has many advantages which make it possible to carry on construction at costs below those of a contractor:

1. In that it is necessary to maintain general city accounting and purchasing organizations, the municipal construction department need not carry a charge for these essential operations, which a contractor must enter against his improvement costs. It is true that these departments cost the city money, but in the case of Lynchburg, at least, the expense is practically the same, regardless of whether or not it handles its own work.

2. The activities of a municipality are so diversified that its organization can be continuously employed without encountering an item of expense, as does the contractor, who must maintain at least a skeleton organization in idleness when jobs are not at hand.

3. Lynchburg operates a shop for the maintenance of all its equipment. In this, there is not only a saving in the actual cost of work below that which a contractor would pay if he patronized a commercial shop, as many do, but there is even a greater return through controlling the shop routine so that no time is lost by idle equipment waiting its turn before repairs can be started.

4. The city saves the costs of bonds which are customarily required of the contractor and which he must charge against the work.

While these advantages relate only to actual improvement costs, the city reaps also a direct financial return when it does its own work through eliminating a substantial portion of inspection expense required under the contract system.

Theoretically, there is no doubt that it is economy for a municipality to construct its own improvements, but it has been my experience that work of any magnitude cannot be effectively and efficiently handled by the so-called street and sewer departments under their usual plan of operation in most cities. These departments are ordinarily established with maintenance alone in mind. Attempts at a combination of construction and maintenance in one organization generally result in more expensive construction than when the work is handled by a crew especially organized for that purpose.

Incidentally, it might be remarked that it also happens under these conditions that maintenance is treated as a secondary consideration, leading to neglect of that important service. More expensive construction costs and less effective results logically follow the transfer of labor to construction for short periods after it has become accustomed to working in the loosely organized groups common to maintenance or patch work. Such labor is ordinarily selected for work of that character. On the other hand, maintenance suffers from natural attempts to concentrate large amounts of labor on construction work, which deplete the regular crews beyond the number necessary to carry on routine repairs and patching. This work must be more or less a continuous operation to secure results.

Handling Construction in Lynchburg

Following this conclusion, Lynchburg established a Department of Public Works essentially to assume jurisdiction over all public improvements, and in this department is now operated a Bureau of Construction for the sole purpose of building streets and sewers with its own equipment and men.

In January, 1921, prior to the creation of the Construction Bureau, bids were secured on alternate types of paving in connection with the improvement of one of the city streets. These bids were rejected because of excessive cost, and the work was readvertised under specifications limiting the improvement to an asphalt-filled vertical-fiber brick surface on a 5-inch concrete base. As a result, somewhat lower figures were obtained. However, the low bid of \$64,372 was \$12,182 in excess of the city's estimate of the cost of the work if done by municipal forces. The Bureau of Construction was then organized and authorized to proceed with the improvement, which was completed at an expense of \$45,208.23, a net saving of \$19,163.77, or more than 42 per cent of the cost. Were a value placed on "extras" for which a contractor would have been entitled to compensation, and were there eliminated certain items of expense occasioned by keeping the street open almost continuously to traffic—a convenience not ordinarily provided by contract work—the saving would have been appreciably greater.

Good management on the part of the Construction Bureau was not responsible

for all of this saving, however, as a small percentage was due to some decline in the labor and material market which took place after the commencement of the work; but had the improvement been awarded to contract, the contractor, and not the city, would have been the beneficiary of these declines. This suggests a question: If prices had substantially increased, would not the city have been the loser? The answer is "No." for the reason that it is customary for vendors of material to guarantee against a rising market quotations furnished by them for a particular job. Be that as it may, comparative costs for subsequent work under stable market conditions show an equally satisfactory return.

Construction by municipal forces returns economies in sewer installation to an even greater extent than in paving construction. It is obvious that the uncertainties connected with the former call for a greater margin to the contractor in estimating costs.

Even disregarding the saving in cost, it has been Lynchburg's experience that municipal construction of improvements would be justified by other considerations:

1. The city has direct control of the improvement, whereby it is possible to arrange the work with due regard to public convenience, to which a contractor ordinarily gives little, if any, consideration.
2. The city can harmonize all types of construction, such as sewers, gas lines, and water installation, which may not be and usually are not a part of a general contract.

While this discussion has been largely general in its application, yet it must be understood that certain fundamental conditions within the control of each municipality are essential for successful operation:

1. There must be adopted a program of sufficient magnitude to insure continuous operation of the construction organization. The reasons for this are obvious. In the city of Lynchburg sidewalk improvements are largely dependent upon the wishes of individual property owners, who contribute a substantial portion of the cost by agreement; the city has no control over the amount, nor can it time the periods for such construction. The expense of maintaining an organization for that purpose, when it can be engaged only at infrequent intervals, does not result in economy. Therefore, sidewalk construction is not included in the activities of the Municipal Construction Bureau.
2. Ample authority must be provided to insure prompt action in all matters affecting the prosecution of the work, particularly in questions of rates of wages, and the purchase of supplies and materials.

The Municipal Paving Plant of Palo Alto

By J. F. Byxbee

City Engineer, Palo Alto, Calif.

IN May, 1916, the city of Palo Alto, Calif., received bids on some 1,300,000 square feet of 5-inch concrete pavement. The lowest regular bidder proposed to do the work at the very favorable figure of 10.65 cents per square foot for grading and paving, and an award of contract was made to this bidder. It appears, however, that there was an irregular bid received which was slightly lower, and the contractor who submitted the proposal objected strenuously to the decision of the Council in awarding the contract to the lowest regular bidder. The matter was taken into the courts and fought out on various points for over a year and a half. The courts sustained the city in all points, but by the time the decision was rendered, the conflict in Europe was on and prices for labor and materials had risen to such a point that it was impossible for the contractor to proceed, so the work was abandoned.

In 1918 bids were again received on this work, but were rejected as being too high. If award had been made at this time, the work would have cost the property owners some \$125,000 more than it would have under the 1916 bid. This was a sore point with the city officials, and they were thoroughly disgusted with the methods employed by contractors to interfere with each other's bids.

The last bidding was in March, 1921, when the city advertised to lay 875,549 square feet of asphaltic and hydraulic cement concrete pavements. The bids received for this work were carefully reviewed by the Board of Public Works and the City Council but were finally rejected as too high, and the City Engineer was ordered to report on the installation of a paving plant and to suggest a method by which the work might be financed and carried on.

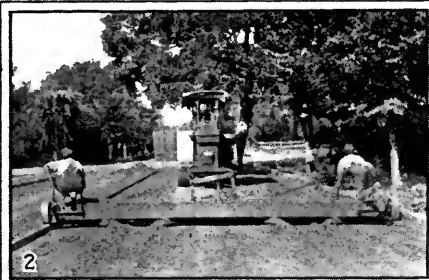
Portland Cement Concrete Adopted

Portland cement concrete was adopted as

the type of pavement to be laid, because it was believed to be somewhat superior to the asphaltic types and also less costly to maintain. Moreover, the asphalt paving plant is more costly to construct than a concrete mixing plant, a fact which further favored the selection of the concrete type of pavement.

The plan adopted for carrying on the work was by private contract between the Board of Public Works and the property owners. The front-foot method of assessment was used, and the payment for the work was to be made in advance of the actual paving. A city of the size of Palo Alto is unable to finance street work on a large scale, so the payment-in-advance plan seemed to be the only practical solution of the problem. The district plan of assessment cannot be used successfully under this system of financing, but probably will be adopted later in certain instances when the cash reserve of the city is larger than at present and can be drawn on temporarily until payments come in.

The type of paving plant adopted was what is known as the central mixing plant, consisting primarily of a rock and sand bunker, a material-measuring hopper and a Smith tilting type stationary concrete mixer. Combined with this was an electrically driven derrick and clam-shell bucket for unloading material from cars directly into the bunker compartments, and a cement platform and shed conveniently placed so that the labor of handling cement from the freight cars to the mixer was reduced to a minimum. This plant meets all our expectations for convenience, accurate proportioning of ingredients, and economy of operation, and for our work is far superior to the central proportioning plant or any of the other plant layouts commonly used for concrete pavement construction. Electrical drive relieves us of power troubles; also, the plant is at all times instantly available for turning out concrete for other



BUILDING CONCRETE STREETS IN PALO ALTO, CALIF.

1. Best tractor hauling Little Giant scarifier in preparing roadway for grading.
2. Road roller hauling Carr subgrader.
3. Rolling rock in the subgrade.
4. Spreading and tamping the concrete.
5. Finishing the pavement with a longitudinal float.
6. Curing the concrete by the ponding method.
7. American derrick and Clyde hoist for unloading cars at central mixing plant

municipal purposes and is used quite extensively in this way.

We use Professor D. A. Abrams' table for 3,000-pound concrete in proportioning the mixture and follow closely his recommendations regarding the water content. Each batch turned out by the mixer contains 18 cubic feet of placed concrete and consists of four sacks of cement, 0.34 cubic yards of sand, 0.54 cubic yards of rock, and approximately 17 gallons of water. The sand is known as the $\frac{1}{4}$ -inch size, and the rock varies from 1 inch to $2\frac{1}{2}$ inches. Concrete is mixed for at least $1\frac{1}{2}$ minutes.

The concrete is dumped directly into one-ton Ford trucks equipped with Lee, Mantz or Heil gravity-dump bodies of a sufficient capacity to take the full 18-cubic-foot batch from the mixer. These trucks are operating very satisfactorily. They are reliable and speedy and deliver the concrete from the plant to the road for approximately 23 cents per ton, which is a very low haulage cost. The distance from the plant to the work during the past year has averaged over one mile.

Pavement Laid in Two Strips

The concrete is laid in two strips in order to effect better control in finishing. By this method a strike board extending from the center of the road to the curb may be used where such a means of tamping would be impractical if an attempt were made to finish the street surface for the whole width in one operation. We have tried both methods and find that it is possible to get a smoother and better concrete surface by laying the pavement in two strips.

The thickness of the pavements for the residence streets now varies from $4\frac{3}{4}$ to 5 inches. The concrete as delivered by the trucks is first spread by hand, then tamped with a heavy strike board shaped to give the surface the required crown. After this operation the surface is rolled with a light hand roller, then finished with a longitudinal float.

The hand rolling is very beneficial in that it eliminates hair cracks by removing the surplus surface moisture. The longitudinal float was adopted because it was found to make a smoother riding surface than any other finishing tool. This float consists of a flat board 8 inches wide by 12 feet long, provided with handles at each end at a convenient height for two men to operate from

bridges spanning the pavement. The float is moved backward and forward in from 6- to 12-inch strokes in a longitudinal direction, and at the same time is shifted slightly transversely so that the whole surface from center to curb is floated. The operation ironed out the irregularities left by the strike board and roller and leaves the surface true and smooth.

No expansion joints are provided. The neutral cracks which form are poured with grade E asphalt or Roadamite. The main objection to this treatment is that it disfigures the appearance of the pavement, because of the irregular black lines following the cracks. A cement-colored filler would eliminate the unsightliness, and it is hoped that something of this nature may be developed.

The pavements are cured by the ponding method for ten days, then allowed to dry out slowly for ten days more before traffic is allowed on them. Water for sprinkling and curing is furnished from hydrants through $1\frac{1}{4}$ -inch pipes temporarily laid along the line of the work.

Revenue Figures

The revenue and expenditure account of the municipal paving plant for the first year's operation is as follows:

| REVENUE | | |
|---|--------------|---------------------|
| Paving costs | \$117,775.83 | |
| Material sold city departments. | 1,731.72 | |
| Sale of dirt, cement, etc. | 786.88 | |
| Sundry paving | 1,385.33 | |
| Sundries | 2,046.24 | |
| | | \$123,726.00 |
| DEBITS | | |
| <i>Grading</i> | | |
| Labor and team hire | \$11,101.35 | |
| Fuel, supplies and repairs | 2,962.68 | |
| Rock for base.... | 1,300.00 | |
| | | \$15,364.03 |
| <i>Curbing</i> | | |
| Concrete curbing and sidewalk construction at street intersections | | \$4,451.04 |
| <i>Concrete Pavement (preparing mixture)</i> | | |
| Labor unloading cars, mixing concrete and hauling to job | \$7,742.12 | |
| Power, fuel, repairs, etc. | 3,810.03 | |
| Sand | 10,575.89 | |
| Broken stone | 13,318.87 | |
| Cement | 44,906.03 | |
| | | 80,352.94 |
| <i>Concrete Pavement (spreading, finishing and curing)</i> | | |
| Labor | 7,799.12 | |
| Supplies and expense | 1,191.95 | |
| | | \$,991.07 |

| | |
|--|--------------|
| <i>Wearing Surface</i> | |
| Labor | \$264.25 |
| Supplies and expense | 87.58 |
| Rock screenings.. | 514.79 |
| Asphaltic road oil. | 795.57 |
| | 1,662.19 |
| <i>Office and Accounting</i> | |
| Salaries and wages | \$3,809.10 |
| Supplies and expense | 1,288.27 |
| Rents | 120.00 |
| Testing materials.. | 333.30 |
| Printing | 32.35 |
| | 5,583.02 |
| <i>Fixed Charges</i> | |
| Interest and depreciation on plant equipment (estimated) | 4,300.00 |
| | \$120,704.29 |
| Net profit | \$3,021.71 |

Under private contract as per bids received for this work on March 14, 1921, the cost for the paving done by the city during the year would have been \$184,521.89, as follows:

| | |
|---------------------------------|--------------|
| <i>Curbing:</i> | |
| 6,229.63 feet at \$0.75..... | \$4,672.22 |
| <i>Gutters:</i> | |
| 11,970 square feet at \$0.32. | 3,830.40 |
| <i>Asphalt pavement:</i> | |
| 153,000 square feet at \$0.22. | 33,660.22 |
| <i>Concrete pavement:</i> | |
| 434,865 square feet at \$0.27. | 117,413.55 |
| <i>Grading:</i> | |
| 12,927 cubic yards at \$1.25. | 16,158.75 |
| | \$175,735.14 |
| Incidental expenses, 5 per cent | 8,786.75 |
| Total cost | \$184,521.89 |

| | |
|--|--------------|
| Actual cost to property owners for the work as done by the municipal paving plant: | |
| <i>Curbing:</i> | |
| 6,229.63 feet at \$0.65..... | \$4,049.26 |
| <i>Pavements:</i> | |
| 599,836 square feet at 18.2c. | 109,170.15 |
| Includes grading and paving. | |
| Incidental expenses..... | 0.00 |
| Total | \$113,219.41 |
| Saving to property owners..... | \$71,302.48 |

For the municipal paving plant to make such a large saving over contract work in its first year's run, and at the same time to operate without loss, is quite remarkable and extremely gratifying to those interested in this project.

Following is a summary of the cost for labor and material:

| | |
|--|--|
| <i>Cement:</i> | |
| \$3.21 to \$3.56 per barrel, f.o.b. Palo Alto, less 5 cents per barrel for cash. Credit for empty sacks 10 to 15 cents each. | |
| <i>Crushed gravel:</i> | |
| \$1.50 to \$1.60 per ton, f.o.b. Palo Alto. | |
| <i>Sand:</i> | |
| \$1.50 to \$1.60 per ton, f.o.b. Palo Alto. | |
| Sand and gravel weigh approximately 2,800 pounds per cubic yard. | |
| <i>Common labor:</i> | |
| \$4 per day of 8 hours. | |
| <i>Cement workers:</i> | |
| \$4.50 to \$6 per day. | |
| <i>Form setters:</i> | |
| \$4.50 to \$5.50 per day. | |
| <i>Ford one-ton truck drivers:</i> | |
| \$4.50 to \$5 per day. | |

ACKNOWLEDGMENT.—From a paper read before the League of California Municipalities.

Black Base for Heavy Boulevard Traffic

Commissioners Adopt Asphaltic Concrete as Foundation for Sheet Asphalt on Washington Boulevard, Chicago, Ill.

By John B. Hittell

WASHINGTON Boulevard from Halsted Street to Ogden Avenue, under the jurisdiction of the West Chicago Park Commissioners, is being repaved with a standard 2-inch sheet asphalt wearing surface upon an asphaltic concrete black (black base) foundation. The roadway width is 48 feet and the length 4,630 feet; the square yardage approximates 26,000. The Commonwealth Improvement Company of Chicago, being the lowest bidder, secured the contract.

While nominally a boulevard, the layout

of the street with its half or staggered intersections is such that heavy traffic will be permitted in going between intersecting outlets. There are thirteen streets leading onto the boulevard at intervals of about 330 feet from which unrestricted traffic will cross over or use the boulevard to the next nearest intersection. Halsted Street, the eastern terminus of the improvement, is only a mile and a quarter from Lake Michigan and lies at the door of the west side manufacturing district. Within the limits of the improvement the street has long since

passed the state of a residential boulevard, and is fronted by many manufacturing or heavy trucking concerns. Among these may be mentioned the National Biscuit Company, the United States Post Office Garage, and the Chicago Machinery Exchange. These conditions, the general disturbance of the macadam foundation prior to the present paving operations, and a small increase in elevation of the new surface were among the reasons prompting the Commissioners in selecting a resilient instead of a rigid base for the wearing surface.

William G. Barclay, Superintendent, West Chicago Park Commissioners, in speaking of the improvement said:

"This part of Washington Boulevard was paved with asphalt in 1893, and some of the intersections were repaved in 1906.

"The areas of the numerous intersections as well as those of parts of the roadway from which heavy or truck traffic cannot be barred owing to the fact that many of the intersecting streets do not continue in line across the roadway, summed up, are probably 50 per cent of the entire area, so that in effect the pavement will be subjected to a traffic similar to that on any business street near-by.

"The disturbance of the old macadam foundation was very general—one corporation made openings every 25 feet along the street—and much rehabilitation work on underground services was necessary due to the period of 29 years between the placing of the pavement in 1893 and this.

"The Commissioners, knowing that additional materials were needed to provide a proper foundation, carefully considered the merits of portland cement concrete and black base. Their investigations of the bituminous type of foundation in several cities, and the opinion of the engineers experienced in pavement construction convinced them that the black base would be

the better of the two; being resilient, it absorbed some of the shock of impact of traffic, thus protecting both the wearing surface and the macadam base; full contact would be had with the base, and perfect bond with the wearing surface; the binder course could be eliminated, and the work would progress more rapidly, as no time would be lost as in waiting for an hydraulic concrete base to cure, an important consideration at this time [fall] of the year and the demands of traffic."

The placing of the black base involved no methods of construction differing from those commonly employed in laying binder. Where the depth of it was more than 3½ inches, the base was laid in two courses, analyses of which are shown below.

Standard Mexican asphalt produced by the Standard Oil Company of New Jersey is used in the asphaltic concrete base and wearing course, typical analyses of which are as follows:

| Base | | | | Wearing Course | | | |
|---------|-----|-------|------|----------------|-----|-------|-------|
| Bitumen | 200 | mesh. | 4.9% | Bitumen | 200 | mesh. | 10.0% |
| Passing | 80 | " | 2.0 | Passing | 80 | " | 12.3 |
| " | 40 | " | 9.5 | " | 40 | " | 29.9 |
| " | 10 | " | 5.6 | " | 10 | " | 37.7 |
| " | 4 | " | 3.1 | " | 4 | " | 10.1 |
| " | ½ | " | 10.2 | | | | |
| " | ¾ | " | 24.6 | Pen. AC. | | | 41 |
| " | 1 | " | 28.4 | | | | |
| | | | 11.7 | | | | |

For the West Chicago Park Commissioners William G. Barclay, Superintendent, has general charge, and William G. Keith, engineer, Thomas Newton, field engineer, and William A. Basse, inspector, are responsible for details of office and construction work. Alexander Todd and Walter Leininger, constituting the Commonwealth Improvement Company, are giving particular attention to the construction, with William G. Foley as foreman in charge. Walter H. Flood & Company and the Chicago Paving Laboratory are acting respectively as chemical engineers for the contractor and the Commissioners.

New York State to Give Water-Works and Sewage Disposal Course

THE Division of Sanitation, New York State Department of Health, has announced that beginning February 5 it will give a course for sanitary inspectors, superintendents and operators of water-works and sewage disposal plants. This course involves some preliminary reading,

then a series of lectures on public health administration, nuisances, sanitary inspection of schools, and public buildings, milk, food inspection, heating and ventilation, plumbing, mosquito extermination, garbage disposal, rural sanitation, sewage disposal, water-supply and other health topics.

Richmond Removes Wooden Poles from Streets

California City Takes Noteworthy Step in Installation of Steel Lighting Standards and Trolley Poles

UP to about one year ago the main business street of Richmond, Calif., had a very unsightly appearance. Poles of all sizes and all shapes, from the old sawed, square redwood poles to the unpainted, round cedar poles used by the various public utilities, leaned in all directions and destroyed the beauty of the street. Municipal officials were distinctly displeased with the appearance of the streets and threatened to force the various utilities to place their wires underground. This brought a condition of affairs which jeopardized the friendly relationship between the city and the utilities.

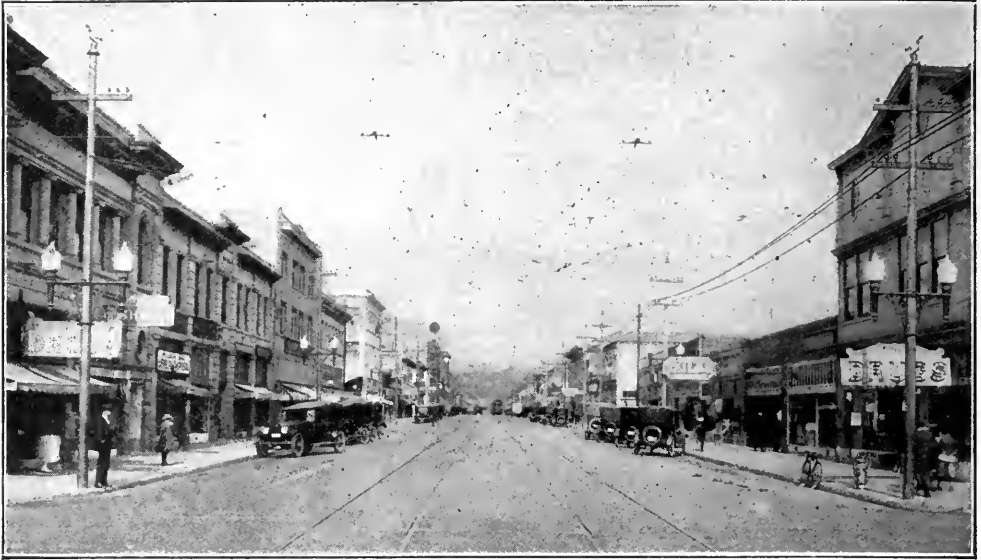
The district affected consisted of 28 blocks. They had been lighted with 21 4-ampere series magnetite arc lamps. It was felt that the main streets of the city should be lighted more efficiently, but with a larger number of poles on the streets the unsightly pole situation would be aggravated rather than helped if additional electroliner poles were installed. The Western States Gas and Electric Company took the

lead and proposed to the City Council that it approve the removal of all wooden poles, all transformers and high-voltage wires, and the installation of steel poles to be jointly used by the interested companies and upon which bracket lamps of 400 candle-power would be placed. The City Council approved these measures and went ahead making arrangements with the other public utilities. No insurmountable obstacles were encountered. On the contrary, every company interested lent every assistance possible to making the installation a success.

Steel poles 37 feet long, set 6 feet in 18- to 20-inch squares of cement, were used. These poles were made in three sections, the bottom section being 8 inches in diameter, the middle section 7 inches, and the top section 6 inches. A cap fits over the top with a short cross-arm, and the wire feeding the bracket lamp loops under this cap and goes down the inside of the pole to the bracket lamp. In each bracket is a compensator, which changes the amperage



THE MAIN STREET OF RICHMOND, CALIF., AS IT APPEARED BEFORE THE REMOVAL OF WOODEN POLES AND THE INSTALLATION OF ITS NEW LIGHTING SYSTEM



THE NEW COMBINATION TROLLEY AND LIGHTING POLES WITH DOUBLE LIGHTING UNITS GREATLY IMPROVE THE APPEARANCE OF THE THOROUGHFARE

from 6.6 to 15 amperes, which is required by a 400-candle-power lamp. The compensator has taps so that a 20-ampere or 600-candle-power lamp can be easily used if desired. The lamps are constant-current, series installations, and the wire feeding them runs overhead along the steel poles.

The traction company agreed to purchase an interest in the steel poles, to remove all its wooden poles and to place its feeder wires and trolley wires on the steel poles, and the Pacific Gas and Electric Company agreed to remove its poles and wires to another street. The Western States Gas and Electric Company removed all its transformers and its 2,300-volt lines, placing the transformers on side streets and feeding into the business streets. The flat rate sign and window lighting circuit is unique, being operated from a time switch in the substation. The time switch controls a magnetic switch in a steel box on a steel pole. These magnetic switches are located in the center of the sign lighting load. This system eliminates the running of heavy wires from the stations for signs and windows. As the load increases, it is only necessary to add magnetic switches along the line.

The only wires on the steel poles are the secondary wires, 110-220-volt, 3-wire and 3-phase, 220-volts, or a 4-wire system. This system is run on each side of the street. The secondary wires feed from the transformer stations located on side streets into the main street and spread in both directions on from two to four blocks, where they dead end. Secondaries from other stations dead end in the same manner, so that if one bank of transformers should burn out, it is easy to connect on to another bank.

The entire change of the old system was accomplished with no interruptions to service. The lamps are installed four to each block—two directly across from each other in the center of each block, and two on each corner diagonally across from each other. There is a total of 111 lamps, covering over a mile and a half of the main business streets.

The system is so attractive and the illumination so brilliant that many favorable comments have been received. The work was done under the direction of George N. Rooker, Manager of the Western States Gas & Electric Company, and the steel poles were furnished by the Electric Railway Equipment Company, Cincinnati, Ohio.

Garbage Collection and Disposal in Florence, Italy

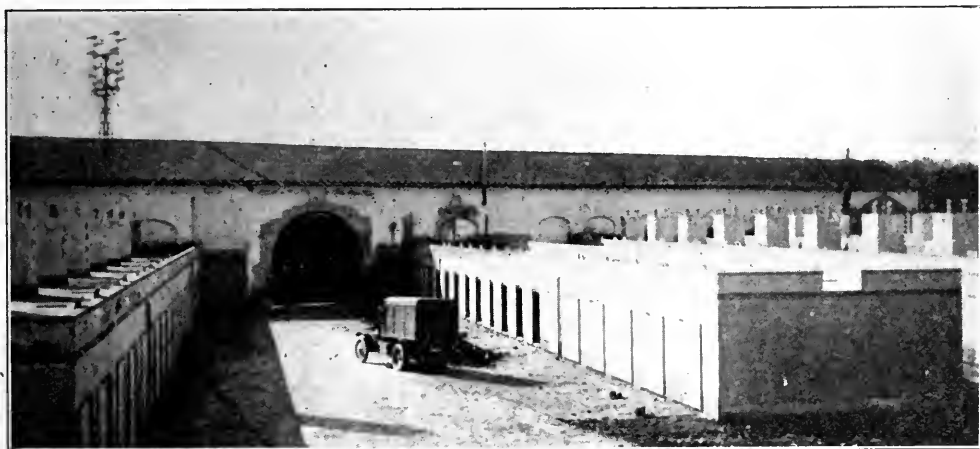
Beccari System of Zymothermic Cells Disposes of Garbage Without Odor and Produces Fertilizer

GARBAGE removal and disposal in Florence, Italy, is entirely a municipal function, carried out under the direction of a department known as the Office of Public Cleaning and Similar Services. This department is responsible for cleaning the streets, as well as for the removal of garbage from private homes and public places. Refuse from the streets is assembled by sweepers in small hand-carts of a half-cubic-meter (.65 cubic yards) capacity and wheeled to a transfer point within the city.

metric tons, or a yearly total of about 40,000 metric tons (44,000 tons).

The Disposal Plant

The disposal plant at Novoli is modern. It is constructed on the Beccari system and consists of fermentation cells of about 20 or more cubic meters capacity each (13, 26 or more cubic yards). These cells are built of stone or reinforced concrete, 2½ meters (8.25, feet high, with rectangular dimensions according to the cubic space re-



GARBAGE DISPOSAL PLANT OF FLORENCE, ITALY, SHOWING INSTALLATION OF BECCARI ZYMOTHERMIC CELLS

There it is loaded into closed horse-drawn vans of 4 cubic meters (5.2 cubic yards) capacity or motor vans of 6 cubic meters (7.8 cubic yards) capacity and conveyed to the municipal disposal plant at Novoli about 2 miles outside the city limits. House refuse is collected in horse-drawn metal vans with a driver and a crew of four men equipped with baskets, in which the material is carried from the interior of the premises. There is no system of placing garbage receptacles outside the house to facilitate this work.

The city owns 15 horse-drawn vans and 12 motor vans for this service. The amount of garbage collected daily is from 120 to 136

quired. This system of garbage disposal was developed by Dr. Beccari. By the use of the Beccari system a fertilizer is produced which is rather high in nitrates, phosphates and potash. A plant after this system consists of cells, four to a unit, each cell measuring 8 by 9 by 10 feet inside dimensions. There is a trap-door at the top through which the garbage is charged into the cell, and another full-size sliding-door at the side of each cell through which the final product, an earthy humus, is removed at the end of the fermentation cycle, usually 30 to 40 days, depending on the character of the charge and the temperature of the

outside atmosphere.

The bottom of the cell has a perforated concrete floor through which the liquid from the garbage drains into a pit. This flows to a central sump, from which it is allowed to drain into the sewer or is pumped back over the fermenting garbage, should the latter become too dry. The maximum temperature of the fermenting garbage is approximately 140 degrees to 170 degrees Fahrenheit, at which temperature the nitrifying bacteria are developed and denitrifying and pathogenic bacteria are destroyed. Garbage in these cells has been inoculated with the germs of diphtheria, scarlet fever, etc., and the spores of anthrax, the latter being the most virulent spore-forming organism known, and all have been completely destroyed within 20 days from the beginning of the cycle.

The upper doors of the cells are water-sealed so that no gases escape. In the roof of each cell there is a small tower in which diaphragms are placed which cause the gases arising from the fermenting masses to pass over a material which, when saturated with certain substances, serves to fix and convert the gas into sulphate of ammonia. The inside of the cells has shelf-like projections built around the side walls, immediately under which are air passages through which air is permitted to circulate, by which means the mass is bathed in air and fermentation accelerated. The garbage is permitted to remain in the cells for 30 to 40 days, by which time it is transformed into an innocuous humus of rather high fertilizing value. About 25 cubic yards of garbage are placed in a single cell, the shrinkage during fermentation being about 17 per cent, so that the final product is about 21 cubic yards. In computing the size of plant necessary for any given city, approximately one cell is allowed per 1,500 population, or one unit of four cells to about 6,000 population in the United States.

One of the advantages of this system, in spite of the fact that about 16 per cent of the garbage in the United States is produced in one month, is that the units do not deteriorate when not in use and can be used for storage purposes during the winter, when the shipment of fertilizer is inadvisable or is impossible. In addition to the city of Florence, the cities of Padua, Pistoia, Carrara, Novara, Viareggio, and many smaller Italian towns use this system for

the disposal of garbage, and Naples, Bologna, Livorno, Spezia, Milan, Palermo and others have contracted for plants.

Beccari Plant in Florence

Some years ago the city of Florence constructed four Beccari cells as an experiment. The results were so encouraging that the installation was increased, until to-day there are 204 cells of 20 cubic meters (25 cubic yards) capacity each, built in five double rows. Each cell has the characteristic gas-collecting tower and a trap-door in the roof for charging the garbage.

The garbage that flows daily to Novoli is first subjected to a close search in order to remove all matter that has a sale value. At present this process is carried on by hand and to such good purpose that the proceeds from the salvage of bones, rags, papers, glass, metal, etc., pay the cost of sorting. The remaining organic matter is placed in the zymothermic cells, together with a certain quantity of the more liquid product of cesspools, which, together with a thorough circulation of air, induces complete fermentation, with consequent extermination of all germs. The final product, a humus, a very rich organic fertilizer suitable for agricultural or other purposes, is marketed in three qualities, which, although similar in make-up, are slightly different in form. The coarsest sells at 40 lire* (\$2.00) a metric ton and is suitable for tree fertilization. The medium size sells for 50 lire (\$2.50) a metric ton and is used for general agricultural purposes. The finest, used by gardeners and vegetable growers, sells for 60 lire (\$3.00) a metric ton at present, but will shortly be raised to 80 lire (\$4.00). This fertilizer is absolutely odorless and easily used, the user having the assurance that all germs have been destroyed that might have rendered the use of natural garbage dangerous.

Cost of Removal and Disposal of Garbage

For the removal of garbage, private individuals in Florence are charged on a sliding scale, based on the number of rooms occupied. The range is 0.75 lire (3.75 cents) a room for from 1 to 4 rooms; 1 lire (5 cents) a room for from 5 to 7 rooms; and 1½ lire (7.5 cents) a room for all above 7. These rates are for 6 months' service and payable

*Lire are quoted at 5 cents.

in advance. For public offices, the rate is 4 lire (20 cents) for each cubic meter (1.3 cubic yards) of material removed during the six months, while for industrial establishments, when the municipality will undertake the work, the rate is 6 lire (30 cents) for each cubic meter of material removed from the premises.

The collection and removal of garbage result in a deficit to the municipality, owing to several factors, principal among which are the excessive costs of labor and hauling. The actual reduction of garbage to fertilizer is self-supporting. It has not been possible to obtain figures for expenses as compared with earnings, but the proceeds from sales of the product amounted to approximately 400,000 lire (\$20,000) in 1922. Laborers in the division of collection are employed on a basis of 15.50 lire (77.5 cents) minimum wage for an 8-hour day. They are not permitted by the unions to contract for more than 8 hours.

The entire cost of garbage removal and disposal for the year 1921 was 3,036,195 lire (\$151,809.75), of which the labor cost represented 2,100,000 lire (\$105,000), the balance being chargeable to up-keep of

equipment, gasoline and other maintenance costs. Fees collected and sale of the articles salvaged in the sorting process brought in 350,000 lire (\$17,500), leaving a net expenditure of 2,686,195 lire (\$134,309.75) for the service for one year.

The total number of laborers employed, including sweepers, drivers, chauffeurs, and men at the disposal plant, is 423.

Conclusion

The system is regarded as entirely satisfactory in Florence from an economic standpoint as well as that of sanitation and the elimination of nuisance. Testimony of this satisfaction is found in the plan to increase the number of cells by 100 as soon as circumstances will permit. With these it is expected to introduce certain mechanical features, such as belt carriers, to facilitate sorting and the lifting of material to the trap-doors in the roofs.

We are indebted to W. Roderick Dorsey, American Consul, Florence, Italy, for a large portion of the data from which this article is prepared. Material has also been courteously supplied by Professor Carlo Botto of Florence, Italy.

Harrisburg, Pa., Sees Economy of Single Lighting Standards

THE cost of lighting the seventy-one 5-lamp cluster standards in Harrisburg, Pa., can be reduced from \$85 to \$64.50 per standard by replacing the five small lamps with a single high-powered lamp, according to City Electrician C. E. Diehl. If similar changes are made in the twelve 7-lamp cluster standards on the

Mulberry Street bridge, the annual cost per standard can be cut from \$112 to \$64.50. The annual saving on these lights will be about \$2,097. Consequently, the City Council is being urged to authorize the change, providing money in the 1923 budget to change the standards from clusters to the single-lamp type.

Wood Block Pavements in Japan

TOKIO, JAPAN, is using Douglas fir blocks, creosoted locally, for paving.

The size of the blocks used is 6 x 3½ x 3½ inches. They are laid on a concrete foundation which has been covered by a layer of mortar. This mortar is mixed in the proportion of one part cement to three parts sand. The wood blocks are laid on the mortar without wetting. Wide cracks are left between the rows, which are later filled with asphalt. The asphalt is poured so as not to entirely fill the cracks. About one-half inch is left near the surface and filled with dirt or sand. No covering or top dressing is used. This method of laying

the block is probably the reason why there has been some complaint about a portion of the wood block paving which was put down about a year ago. If these blocks had been thoroughly treated and laid as they are in Europe and America, the pavement would probably have lasted for at least ten years.

A very rough estimate of the percentage of various kinds of paving planned for Tokio to be carried out prior to the end of 1926 is as follows: present completed wood block paving, 1 per cent; future wood block paving, 10 per cent; stone, 5 per cent; asphalt, 52 per cent; and asphalt macadam, 32 per cent.

Activated Sludge Process Grows in Favor

New Sewage Disposal Method to Be Used in Los Angeles and Other American Cities

IT is quite generally conceded that the activated sludge process is the most perfect method of sewage disposal at the present time. Its growth in America and European countries has been widespread. Since the discovery of the process, early in 1914, the method has been adopted for several municipalities, and an exceedingly large number of experimental plants have been put in operation. The most notable ones in existence at the present time are at Davyhaulme (Lancashire), Worcester, Stamford, Aeritree, Sheffield, Bradford, Tunstall, Blackpole (Worcestershire), Whitney (Blanket Co.), St. Albans, Withington, Moreton (Dorsetshire) Birmingham, Reading, Baguely and Stoke-on-Trent, in England. In the United States the best-known plants are at Houston, Texas, and Milwaukee, Wis.

Recently a plant has been installed at Woodstock, Ontario, to handle 1,500,000 imperial gallons per day, dry weather flow. A small plant has also been installed at Brampton, Ontario. A plant was put in operation on October 18, 1921, at Gastonia, N. C., which treats 1,000,000 gallons of sewage daily. In October, 1921, an installation was put in operation to treat the waste (600,000 gallons daily flow) from the Decker Packing Plant at Mason City, Ia.

Experimental plants have been in operation for some time at Urbana, Ill., the Calumet region of the Sanitary District of Chicago. This plant when completed will have a capacity of 1,750,000 gallons and the plant of the Desplaines River district of the Sanitary District of Chicago, when completed will treat the sewage from a population of 30,000.

Works are in the process of construction

in Milwaukee which will treat the entire sewage from that city, population 588,750, and at Indianapolis, Ind., population 314,000. Pasadena, Alhambra and South Pasadena, Calif., have decided to build a 3,500,000-gallon plant, described in detail in the January, 1923, issue of *THE AMERICAN CITY*. Other plants in the process of construction at the present time are in Brisbane (Australia), and Singapore (India).

Rotham, Hanley and Mansfield (England) are considering schemes along the line of the Sheffield works. Los Angeles, Calif., is also considering the adoption of the activated sludge process for the treatment of sewage of that city.

The experimental plants in this country have practically all been with the diffused air treatment, which consists of blowing air through the sewage and sludge, after it has passed through filtros plates.

Mechanical agitation, that is, the use of revolving paddles, has proved successful at Sheffield, England. These paddles suck the air through a tube by creating a vacuum, and rotation is carried for 8 hours. By this method the sewage is brought in contact with the air at its surface only; the power required is to mix the sewage and induce a current, and by rippling the surface it increases the surface exposed to the action of the air. The Sheffield sewage may be a special type, and experiments made elsewhere indicate that mechanical agitation alone will not purify sewage in the presence of activated sludge without the expenditure of much more energy than the air diffusion method; the original and maintenance costs also seem to be somewhat greater.

New Lease on Life of Road

Twenty-second Avenue, Meridian, Miss., paved with brick in 1898, was resurfaced in 1921, the 23-year-old brick being turned over and filled with asphalt. The original cost was \$2.25 per square yard, and the resurfacing cost brought the total to \$2.90 per square yard. City officials expect the reconstructed pavement to last another 23 years at least—a total of 46 years of service for the brick. The pavement carries freight-yard traffic.

The Snow Removal Organization in Newark, N. J.

Equipment and Personnel Ready for Clean-up as Soon as Two Inches of Snow Has Fallen

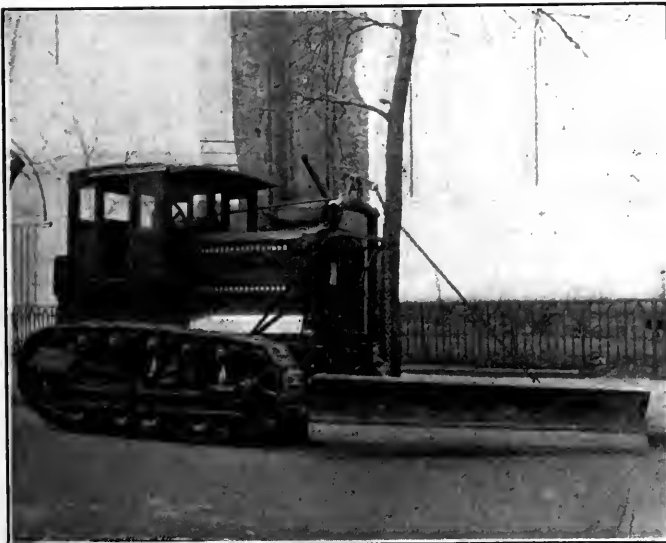
THE snow removal organization of Newark, N. J., operating under the Division of Works, consists of the Chief Engineer, an engineer in charge, three special inspectors, about twenty general inspectors, and eight repair mechanics who, working in double shifts, make rapid repairs on pieces of equipment which become damaged. Actual snow removal is started as soon as two inches of snow has fallen. The work is prosecuted as rapidly as possible thereafter until the fall has stopped and the work of clearing and removing it has been completed. Labor is furnished by the street contractors of the city. The mechanical equipment consists of nine plows, three 10-ton tractors, and thirty-



MACK FLUSHER EQUIPPED WITH SNOW-PLOW, USED IN NEWARK, N. J.

five bottom-dump, team-drawn refuse wagons. Numerous additional motor trucks furnished by contractors are brought into use as the snowfall requires.

The cost of clearing snow varies, depending upon whether the fall occurs during the day or the night and whether it is accompanied, preceded or followed by rain. On February 4, 1920, there was a fall of 20 inches in Newark, the heaviest fall the city has experienced in a great many years. On account of this storm, New York and many other large cities were tied up for weeks. In Newark, however, throughout the storm, and afterward, all trolley and jitney schedules in the city were maintained with no noticeable interruption. All the business arteries were open for the free passage of traffic within eight hours during the snowfall. The cost of the removal of this snow was slightly less than \$100,000.



A 10-TON HOLT TRACTOR WITH SNOW-PLOW ATTACHED USED FOR REMOVING SNOW FROM BUSINESS STREETS IN NEWARK, N. J.

Local contractors cooperate with the Division of Works and have their gangs in readiness at vantage points in the downtown section, by the time the Chief Engineer is ready to put them to work. The initial attack is made in the very heart of the business district.

The first gangs go to work at the corner of Broad and Market Streets, and the succeeding ones tackle parallel streets in the business section, gradually radiating out of the business arteries. The down-town section of the city is cleaned of snow from gutter to gutter. The snow is carted away and disposed of in sewer manholes and also dumped over the city docks into the Passaic River. When the gangs and equipment start working in the business district, they

concentrate first on clearing snow from the traffic lanes, pushing it to the gutter and afterward piling and removing it. The business arteries, of which there are fifteen, and all of which extend from the center of the city over to suburban towns, are ploughed and scraped all the way to the city lines. In addition, a half-dozen heavily used cross-town streets are cleared of snow, and twelve jitney routes in various sections of the city are scraped so as to provide for the uninterrupted maintenance of schedules by the busses. Snow is thoroughly cleaned in front of all railroad stations and freight depots, coal pockets, theaters and food stations, including packing-houses and milk depots, to expedite the movement of congested pedestrian traffic.

Snow Removal in Salt Lake City, Utah

By T. T. Burton

Commissioner of Streets and Public Improvements, Salt Lake City

SALT LAKE CITY is probably the only city in the country that has to handle snow from property line to property line, a distance of 132 feet. Inasmuch as it is an aim of the city to facilitate winter shopping, it is necessary that snow be loaded

very rapidly. The machine which has been developed for this purpose by the city is mounted on a Barber-Greene bucket loader without changing any of the framework. This makes the pitch of the machine a little too steep for permanent use. However, we



SALT LAKE CITY'S EFFECTIVE MACHINE FOR LOADING SNOW INTO MOTOR TRUCKS

are able with the use of a fleet of motor trucks equipped with Baker snow-plows to push the snow into one large windrow. The machine is then headed right up to the windrow. The 5-ton trucks, equipped with 12-inch flareboards, are backed underneath the chute of the elevator and are loaded in less than 2 minutes each. The rest of the snow, left on the streets after the snow-plows and loaders have completed their work, is melted off quickly with the use of hot water from the local sulphur springs within a mile or so of the business district.

On January 2, 1923, we completed cleaning up the fourth heavy snowstorm of the winter, and the entire business section has been completely free from snow, in most cases, within 12 hours, the last snow taking 48 hours.

The machine we are using not only does away with from 35 to 50 shovelers on the streets, but enables us to do two or three times as much with the trucks, as they are on the move all the time. All three factors, the Baker snow-plows, the hot springs

water, and the loader, make a most formidable snow-fighting outfit.

The idea used in the elevator and the snow loader was suggested by the drag chain conveyor of our Western Mines and Mills. The chute is made of I-beams with a steel bottom, and the steel paddles, 36 inches long and 8 inches wide, are carried up the chute with a chain belt running over sprocket wheels. As the chain belt draws the belt up the chute, the caterpillar moves ahead. These blades are placed 18 inches apart and cut a large amount of snow with each blade. There are 36 blades working in the 26-foot chute. There is no necessity for workmen at the mouth of the chute, except to pick up straggling snow on the windrow wider than the entrance of the chute. However, the machine can be made to operate in almost any width of windrow.

The machine now in use was constructed very quickly to see whether the idea would be practical. It has been so successful that we plan to equip one or two more immediately for the city's use.

Methods of Snow Removal in Walpole, Mass.

By Harry A. Whiting

Town Treasurer

WALPOLE, MASS., a town of about 6,000 inhabitants, situated on the Neponset River about half-way between the cities of Boston and Providence, has given an object lesson in economically and effectively removing the winter's heavy snowfall so that the inhabitants can go about their usual occupations as easily as in summer.

In the spring of 1921, the town, on advice of the town engineer, E. F. Durfee, issued bonds for \$30,000 for the purchase of highway equipment, which included three 2-ton trucks, a stone crusher, a steam shovel and an asphalt plant. For a number of years many of the citizens had been aware that under the old system of graveling the streets then prevailing, large sums of money were being expended without any improvement in the surface conditions of the streets.

The town has numerous large banks of gravel which is of but little value for road

material in its natural state owing to the unevenness of its composition. Under the new methods adopted, however, all material is run through the crusher and separated by the screens and made ready to be placed upon the road. Six inches of the larger stones is placed at the bottom of the street with a stone spreader, and this is covered with peastone and sand and rolled with a 10-ton roller while wet. Then the final coat of oil or Tarvia is applied. A permanent road has been built for about \$5,000 per mile, the usual cost of the old-fashioned unsatisfactory gravel road. A Cletrac model W tractor and a Fordson tractor have been added to the equipment, thus eliminating the use of horses in street construction.

As busses have replaced the electric cars in Walpole as means of transportation within the limits of the town, the present town engineer, Allston F. Hart, decided to



A TYPICAL SCENE IN THE CENTER OF WALPOLE, MASS., SHORTLY AFTER A HEAVY SNOWFALL

apply up-to-date methods in snow removal so that there would be no such blockade as existed in the town in the early part of 1920. Two of the 2-ton trucks were equipped with one-blade snow-plows, such as are used on the state highways, and these trucks were started as soon as the first snow fell, in order to keep the bus route from South Walpole to East Walpole and the state highway from the Norwood to the Norfolk line clear of snow for a width of about 20 feet. One of these trucks also kept the main street to Medfield open.

The Cletrac tractor was fitted with a Chase snow-plow, and the Fordson with a Starkweather snow-plow, and these tractors were assigned to the job of keeping open for auto traffic the remainder of the 75 miles of Walpole streets.

During the week of February 6 to 13 in

the year 1920, the town spent \$3,101.73 in an unsuccessful attempt to keep the streets open for traffic. This year, with similar conditions of snowfall, the largest week's expense for snow removal has been \$481.41; every street in town is cleared for the easy operation of motor vehicles, and busses have never been a minute late by reason of bad wheeling. Included in this sum is the cost of plowing out the sidewalks over the entire town with horse plows. The cost of operating the two trucks and two tractors, including gasoline and wages of two men on each unit, is about \$43 per day of 8 hours for the four pieces.

These almost ideal winter street conditions have been brought about by the foresight and systematic planning of the town engineer, and by the loyalty of the men who have kept the roads open.



MEDIUM-WEIGHT TRACTOR EQUIPPED WITH V-SHAPED SNOW-PLOW BREAKING OPEN A ROAD IN WALPOLE, MASS.

Maintaining the Health of Municipal Employees

By Clinton Rogers Woodruff

PHILADELPHIA is doing a splendid and record-establishing work among its policemen and firemen in looking after their health. The Civil Service Commission, through its medical examiner, protects the entrance to the city service. Everyone seeking a position under the Philadelphia city government, whether a day laborer or the chief of the most important bureau, must undergo a medical examination, to make sure that his or her health is sound and that he or she is physically fit to do the work. This is supplemented by a reexamination immediately prior to the applicant's being sworn in, so as to make sure that he has suffered no incapacitating injury or illness between the time he was examined by the Commission and the time of appointment.

The Chief Surgeon of the Bureaus of Police and Fire, Dr. Hubley R. Owen, has always worked on the principle that the city is a large industrial plant, and his object has been to give the greatest number of days' service per man to the city, and personally to administer or to supervise the medical and surgical needs of the members of the Bureau of Police and Fire. Any member of either bureau reporting off duty because of illness must also report to his office. If this member is not able to report because of sickness or injury, he is immediately visited by one of the district surgeons, and a report is rendered to the Chief Surgeon. The members of the bureaus appear to be very willing to report, not only obeying the rules as stated above, but constantly seeking advice even when not incapacitated for work, thus following out the idea of having "a family doctor."

It is, of course, impossible to attain this object as well in the Department of Public Safety as it can be attained in an industrial plant, where practically all the employees are housed under one roof, and where it is only a question of a few minutes to report to the doctor. The city cannot encourage its men to report for trivial illnesses.

The Chief Surgeon has every facility for handling surgical cases, and also uses the ward for police and firemen at the Philadelphia General Hospital. He has a nose and throat dispensary three days a week, a neurological dispensary once a week, a daily eye dispensary, and a daily medical dispensary. He has arrangements with the Dental School of the University of Pennsylvania to care for the teeth of the members of the bureaus. Medical cases which he does not consider himself qualified to treat are sent to Dr. Henry K. Mohler, Medical Director of the Jefferson Hospital and District Surgeon of the Fifth Police District, for his examination and advice. During the coming year, it is hoped to perfect the work of the medical dispensary. There is excellent X-ray apparatus in the City Hall office, so that it is possible to take photographs immediately.

In the fall of 1920, every member of the Bureaus of Police and Fire received a physical examination, under the Chief Surgeon's supervision, by the physicians on the staff of the Henry Phipps Institute. In this way there was a thorough check on the physical condition of every policeman and every fireman. By this examination, a number of cases of incipient tuberculosis, diabetes, etc., were found, and treatment was recommended for all deficiencies. At first, when the orders were issued for this examination, the members of the bureaus hesitated, as they were somewhat suspicious of the intent of the examination, but when it was explained to the men, they more than willingly submitted to it.

There is a large field for the prevention of disease among the police and firemen, and the Chief Surgeon is, step by step, handling this problem. Prevention of accidents is in the same category, but this prevention among the police and firemen is a different problem from the prevention of accidents in industrial plants.

A complete reorganization of this branch of the Department of Public Safety has been asked for, to enable the Chief Surgeon

to have salaried division surgeons in place of the present district surgeons paid by fees. It is not thought that the work will be performed better by salaried physicians, but the medical care of the members of the bureaus, as well as the medical care of the prisoners, has increased to such an extent that the appropriation now required is excessive, and, for this reason, it will be economy to have salaried division surgeons.

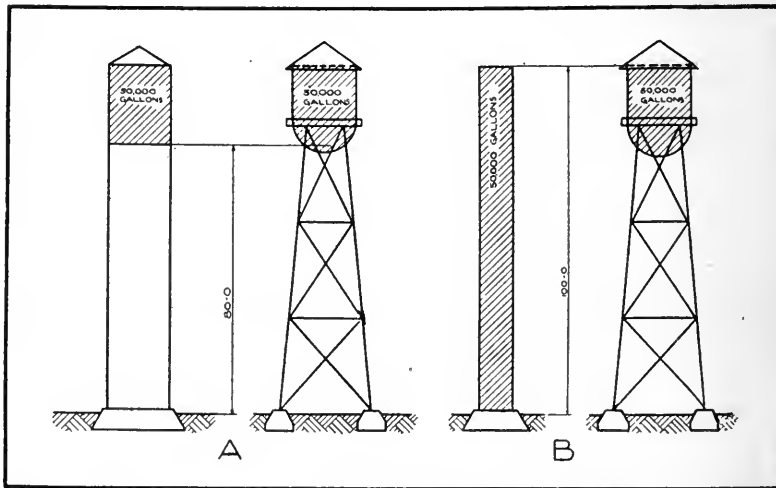
In every way possible, efforts are being made to prevent illness, to reduce expenses and to care for the sick and injured, and with a large measure of success. The police

and fire forces of Philadelphia are constantly improving in health and morale. It will be some time before all these plans have their full measure of results. It will also be some time before the effects of the war are entirely overcome, as the city was compelled to take the men it could get during that period rather than the men that it wanted. These are gradually being improved by care and attention, or eliminated for unfitness, and through improved service methods and health methods, the force is reaching a high standard of municipal efficiency and usefulness.

Stand-Pipes or Elevated Tanks for Water-Works Systems?

MANY municipal officials who are planning water-works systems come to the need of a tank for holding water at an elevation either for storage or to maintain pressure. They first consider a stand-pipe, that old-fashioned tall tube commonly built years ago for small-town water-works. Very few stand-pipes are

an installation, and in order to provide sufficient pressure throughout the town, the entire capacity should be above 80 feet. An elevated tank of this capacity is about 19 feet in diameter by 25 feet 6 inches in depth. It weighs about 56,000 pounds and requires 28 cubic yards of concrete for its foundations. If a stand-pipe fulfilling the same



built to-day, as compared with the number of elevated tanks. There is a reason for this, namely, that it is uneconomical for storing water at an elevation.

Let us take a typical case and work it out. Consider a water-works for a town with a population of 500 to 1,000. A 50,000-gallon tank is a common size for such

requirements were built, it would have to be 19 feet in diameter by 104 feet high. It would weigh 77,000 pounds. The foundation would have to be rather large in order to prevent overturning and would require 140 cubic yards of concrete.

These two structures are shown in the accompanying diagram A. If we consider

that the steel work would cost about $7\frac{1}{4}$ cents a pound and the concrete \$14 a yard, the total costs would be as follows:

STAND-PIPE

| | |
|------------------------------|---------|
| Steel, 77,000 pounds or..... | \$5,590 |
| Concrete, 140 yards or..... | 1,960 |
| Piping | 50 |
| Total | \$7,600 |

ELEVATED TANK

| | |
|------------------------------|---------|
| Steel, 56,000 pounds or..... | \$4,060 |
| Concrete, 28 yards or..... | 390 |
| Piping | 500 |
| Total | \$4,950 |

In other words, for the same service, the stand-pipe would cost over 50 per cent more than the elevated tank. It has often been assumed that the water in the lower part of a stand-pipe is just as useful as the water in the upper part. This, clearly, is wrong. If the water-level should be permitted to fall below the level of useful pressure, and a fire should break out at some point in the town, the stand-pipe water-supply would be worthless, as the pressure in the fire hose would probably not be sufficient to produce an adequate fire stream with the strength to carry itself into the fire. The National Board of Fire Underwriters in its schedule

for grading the water-works of small towns states that if the stand-pipe is used for the gravity supply, the top 25 feet of the capacity only should be considered as useful.

If a hill is available on which the tank may be placed, the tower may be shortened, or if the natural elevation be high enough, the tower may be done away with entirely, in which case a flat bottom tank of the most economical dimensions should be built. This type of tank, however, should not be of the stand-pipe shape, but of large diameter and of shallow depth.

It frequently happens in the design of a water-works system that both stand-pipes and elevated tanks are considered and a comparison of costs made between structures of equal capacity and equal height. Figure B illustrates two such structures. This comparison is wrong. The stand-pipe has but a small part of its volume of water elevated to a useful height, whereas all the water in the elevated tank is useful. In general it may be stated that if a given volume of water is to be stored at some elevation above the ground, an elevated tank will cost less than a stand-pipe.

—*The Water Tower.*

Make Your Water-Works Grounds Attractive

It Is Good Advertising for the Small Town as Well as the Large City

By R. E. McDonnell

Burns & McDonnell, Consulting Engineers, Kansas City, Mo.

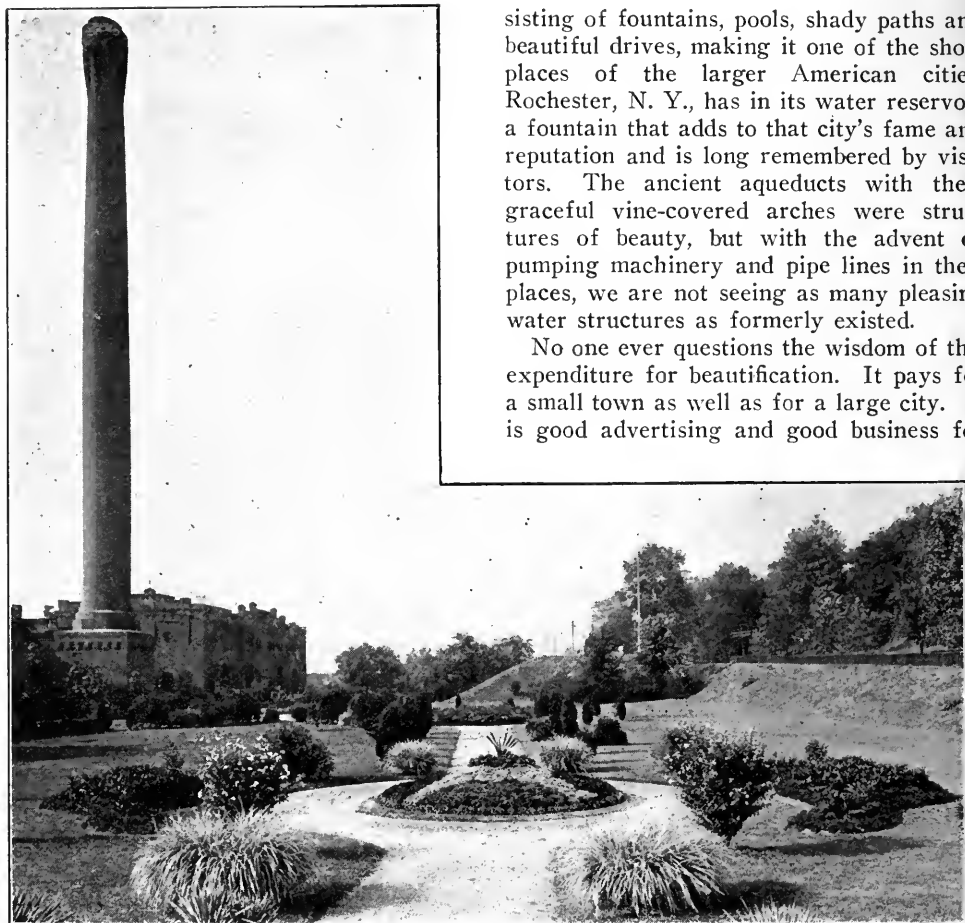
IT is almost impossible to overdo the beautifying of water-works grounds.

Your first impression of a water-works plant, like your first impression of an individual, is gained from appearances and may be favorable or unfavorable. The water plant does not exist or succeed that can afford to ignore public opinion. Without favorable opinion, it is almost impossible to make 100 per cent collections, difficult to enforce regulations, and useless to attempt the raising of funds for extensions or rehabilitation. Out of 6,000 water plants in the United States, it is a safe estimate that half of them have no ornamentation or artistic treatment of the grounds and the

appearance of them is such that public opinion is unfavorable.

About 80 per cent of all water expenditures are for wells, mains, conduits, services, meters, and other underground structures. Consequently, the buildings and grounds involve a relatively small expenditure in comparison with their importance from the standpoint of the visitor. The entire water plant is judged by the appearance of that part visible to the layman.

If the grounds are clean, well kept, artistic and pleasing to the eye, the whole plant instantly receives favorable approval. The money spent in beautification of the grounds is a wise expenditure and a good advertise-



A VIEW OF THE ATTRACTIVE GROUNDS OF THE ST. LOUIS, MO., WATER-WORKS

ment for the entire city, for cities are frequently judged by their water-supplies. The safety and purity of a water-supply are often estimated upon the basis of the external appearance of the reservoirs and surroundings. A feeling of security and health is assured when buildings and grounds are immaculate in appearance. Even the smallest plant can afford a few flower-beds, shrubbery and perhaps a little pool or fountain.

Some cities have either located their stations in city parks, or park departments have taken over the grounds as a part of the park work. South Bend, Ind., has its principal station in Riverdale Park, and the architecture of the building and the character of improvements are in keeping with the surroundings. The St. Louis water-works surroundings are very elaborate, con-

sisting of fountains, pools, shady paths and beautiful drives, making it one of the show places of the larger American cities. Rochester, N. Y., has in its water reservoir a fountain that adds to that city's fame and reputation and is long remembered by visitors. The ancient aqueducts with their graceful vine-covered arches were structures of beauty, but with the advent of pumping machinery and pipe lines in their places, we are not seeing as many pleasing water structures as formerly existed.

No one ever questions the wisdom of this expenditure for beautification. It pays for a small town as well as for a large city. It is good advertising and good business for

the superintendent, the mayor, the water board and the city, and it does the consulting engineer no harm to leave his job with an attractive appearance as well as an efficient works.

ACKNOWLEDGMENT.—From a paper read before the Southwestern Water Works Association Convention, Hot Springs, Ark., 1922.

What Other City Councils Are Doing

THE Bureau of Statistics of the Municipal Reference Library of Chicago is doing a public service in issuing from time to time mimeographed sheets containing brief lists of references to ordinances introduced in or passed by city councils of cities other than Chicago. The fourth of these lists bears the date of January 2, 1923. Copies may be obtained from Frederick Rex, Municipal Reference Librarian, 1005 City Hall, Chicago, Ill.

A Primer of City Planning Progress and Legislation

By **Miriam I. Ross**

Secretary, Division of Housing and Town Planning, Massachusetts Department of Public Welfare

THE first partial zoning ordinance in the United States was passed in Boston in 1898. This ordinance limited the heights of buildings in Copley Square and was followed by an act in 1904 dividing Boston into two districts—A and B. In district A, buildings were limited to a height of 125 feet, and in district B, to a height of 80 feet. The next partial zoning ordinance in the United States was passed in Los Angeles in 1909. This ordinance was retroactive in its provisions and has been upheld by the Supreme Court of California and by the Supreme Court of the United States. The only restriction was concerning the use of buildings, setting aside certain portions of the city for industrial districts, but keeping the rest residential. The first comprehensive zoning ordinance was adopted in New York in 1916.

Zoning is perhaps the most popular movement in the city planning field to-day. By regulating the height, area and use of buildings, zoning safeguards property values and insures protection of residential areas. Zoning is, however, but one of the forms of city planning work. A comprehensive city plan will embrace all the factors in the life of the city—public, semi-public and private. These factors include the street system and traffic regulation, the parking of vehicles, the transportation system, bridges and grade crossings, the provision of utilities, as water, gas and electricity, the sewerage system, the disposal of waste, the creation of parks, playgrounds and parkways, the development of waterways, the school system, lot subdivision, building lines, housing, regulation of billboards, and zoning.

How City Planning Is Accomplished

The best city plan if it reaches only the stage of a network of lines on paper will be valueless. The city plan must be enforced in order to be felt in the life of the

community. And for its enforcement a city planning board or commission is formed. The movement was started in the United States by private initiative, the work of a chamber of commerce or improvement association or other similar body of citizens which did the experimental and preliminary work necessary before it was taken over by public authorities. In 1907 the first permanent city planning commission was appointed in Hartford, Conn.

In the laws under which city planning commissions operate, the commissions are instructed to make plans for the proper development of the community. The commission is usually made up of unpaid men—men who have made a special study of this subject, men who are public-spirited and active in community work, or men who are good organizers and can aid the commission in publicity work and in educating the community to the need of carrying out the city plan. Where possible, an expert city planner is made a member or a consultant of the commission. This expert may be an architect, a landscape architect, an engineer, or a lawyer who has given special study to the science of city planning.

A board may be composed of any number of members, though the city planning law of some states limits the membership to a certain number. In small communities three members may be enough, though from five to nine members make a good working group. A large board is apt to be unwieldy, hard to get together, and not quite so efficient as the smaller board. In cities it is customary for members to be appointed by the mayor, and in towns the commission is usually elected by the voters. It is most desirable that the members serve for long periods, so that the work may be interrupted as little as possible by changing membership. The terms of the members usually vary, overlapping, so that the terms do not end all at the same time. This is desirable,

as it insures, after the initial appointment has been made, that the majority of the commission shall be experienced.

Three-fold Nature of the Work

The work of the city planning commission is three-fold—planning, advising, and selling the plan.

First, the plan must be made, and as a primary step a survey and map of the city should be made to show existing conditions. For it is usually true that city planning must of necessity mean city replanning, in the older portions of the city at least. Occasionally a new development is planned from the start, but more often the problem is to use the best of what exists in a community, adding to it and making changes where necessary.

The function of a commission is mainly advisory. It is not intended or desired that the planning commission shall supplant in any way the organized departments of local governments, but that it shall pull departments together, planning for the whole community and acting as advisor to the boards already functioning. It is seldom that a law gives a planning commission power to carry out its own plans; and this is wise, for as soon as a planning commission becomes burdened with the details of construction, its usefulness as a body that can take a long look ahead and study future needs is impaired.

An important part of the work of the planning commission is getting the plan accepted and carried out. This entails educational work—publicity through the press, through lectures, exhibitions, motion pictures, schools, churches, libraries. The important thing is to get the plan before the people in graphic form, showing as dramatically as possible what advantages the plan will bring if carried out, showing also what failure to plan will mean in the future life of the community. The governing body of the community must be convinced that the people are favorable. If that can be done and the pressure of the voters is felt, the plan is more likely to be accepted and much more likely to be a living thing after its acceptance. It is not enough that the plan be accepted. It must be carried out, and not laid away and forgotten after acceptance. It is customary for the planning commission to have no power to enforce the plan it produces. This, usually works out

well. The test of the plan is its reception by the community which has been educated to consider it. A poor plan should be rejected. A good plan, backed by convincing arguments and given publicity of the right sort, will stand a fair chance of being accepted, and the community, in studying the question of its acceptance, will be educated to a better citizenship.

State Laws

Of our 48 states, 21 have no state-wide law on city planning. A few of these 21 states have cities with planning commissions, as, for instance, Memphis, Tenn., and Fargo, N. Dak. In Maryland, Baltimore has a city zoning ordinance, while bills to provide for the establishment of city plan commissions and for zoning were submitted to the 1922 Legislature but failed to pass. The state of Washington reports that public-spirited men in Spokane and Seattle are planning to submit a bill to the next Legislature. Of the remaining 27 states, 20 have laws authorizing or requiring the establishment of planning commissions, and 26 states and the District of Columbia have partial or comprehensive zoning enabling acts.

The following table lists the state laws on zoning and city planning:

| STATE | Zoning | City Planning |
|---------------------------|------------|---------------|
| California | 1917 | 1915 |
| Connecticut (1 city)..... | 1921 | 1919 |
| Georgia (1 city)..... | 1921 | .... |
| Illinois | 1921 | 1921 |
| Indiana | 1921 | 1921 |
| Iowa | 1919 | .... |
| Kansas | 1921 | 1921 |
| Kentucky ..... | .... | 1922 |
| Massachusetts | 1920 | **1913 |
| Michigan | 1921 | 1921 |
| Minnesota | 1921 | 1919 |
| Missouri | 1921 | .... |
| Nebraska | 1919 | 1921 |
| Nevada* ..... | .... | 1920-21 |
| New Jersey | 1920, 1921 | 1913, 1916 |
| New York | 1921 | 1913 |
| North Carolina*..... | .... | 1921 |
| Ohio* ..... | .... | 1915 |
| Oregon | 1919 | 1919 |
| Pennsylvania | 1919, 1921 | 1911, 1913 |
| Rhode Island..... | 1921 | .... |
| South Carolina..... | .... | 1920 |
| Tennessee | 1921 | .... |
| Texas | 1921 | .... |
| Vermont* ..... | .... | 1921 |
| Virginia | 1922 | .... |
| Wisconsin | 1917 | 1917 |

* Grants zoning powers to planning commissions.

** Amended 1914.

The zoning acts of the various states differ in details. The purpose of all the acts is the same—the safeguarding of health and property values by permitting regulation by districts of height, area, and use of buildings. Zoning regulations differ in

different districts, but are the same for all districts of the same type.

Laws governing the establishment of planning commissions in states are mainly permissive laws. The Massachusetts law is mandatory for cities and for towns of over 10,000 population, permissive for smaller towns. Usually the law states that no member of the commission, or only the secretary, shall receive compensation for his work.

State Departments

State departments exist in three states—California, Massachusetts and Pennsylvania.

The California department is the Commission of Immigration and Housing, established in 1913. In addition to its duties in connection with the Americanization of the immigrant, the Commission is instructed "in cooperation with the proper authorities and organizations" to "encourage the establishment of playgrounds and other recreational activities, and also the establishment of settlements and social centers in cities and towns"; also "to investigate housing conditions under which immigrants live" and, finally,

"The commission may make investigations of the housing of immigrants and working people and of city planning in California and elsewhere, may encourage the creation of local city planning commissions and may furnish information as to the progress of other cities for the use of such commissions. It may investigate and report upon defective housing and the evils resulting therefrom and the work being done to remedy the same in California and elsewhere. It may make studies of the operation and enforcement of building and tenement house laws, of housing finances and taxes, of zoning and districting regulations and may promote the formation of organizations intended to increase the supply of wholesome homes for the people, and aid in the enforcement of any laws enacted to promote the purposes for which the commission is established."

Every planning commission is required to report to the state department, and the department is authorized to aid the commissions with information and suggestions.

The Department of Public Welfare in Massachusetts carries on the work of the Homestead Commission created in 1911 and abolished in 1919. Its duties, in so far as they relate to the subject of city planning, are as follows:

"The commissioner and board shall investigate defective housing, the evils resulting therefrom and the work being done in the commonwealth and elsewhere to remedy them, study

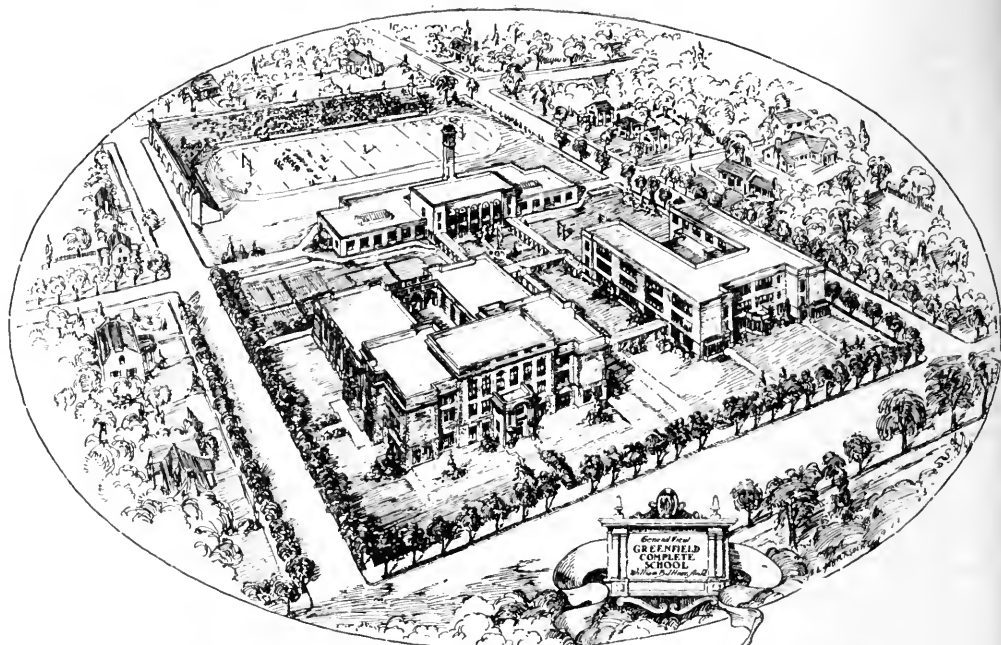
the operation of building laws and laws relating to tenement houses, encourage the creation of local planning boards, and promote the formation of organizations intended to increase the number of wholesome homes for the people."

Special power is given, subject to the consent of the Governor and Council, to provide homesteads for citizens with public funds. Like the California department, it is required to cooperate with local governments and boards.

The Pennsylvania department was established in 1919 as the Bureau of Municipalities in the Department of Internal Affairs. The text of the act as it relates to planning commissions follows:

"The said bureau shall gather, classify, index, make available, and disseminate data, statistical information, and advice, . . . in order to promote a comprehensive plan or series of plans for the probable future requirements of cities, boroughs, or townships of the commonwealth, either separately or jointly, in respect to a system of traffic thoroughfares and other highways or main highways, transportation of every sort, suitably coordinated sites for public buildings, parks, parkways, playgrounds, and other public uses, the preservation of natural and historic features, and any and all public improvements tending to the advantage of the municipalities or townships affected, tending to their advantage as a place of business and residence, and to either make or secure or assist in making or securing the necessary surveys, plans, and information."

Since the first partial zoning act was passed 24 years ago, state-wide laws permitting city planning commissions or zoning have been passed in 27 states, 3 more than one-half the total number of states in the Union. The year 1921 saw the greatest number of zoning acts passed, as 16 of the 26 acts were accepted in that year. The city planning laws were more scattered over the whole period, although the largest number passed in any one year, eight, found acceptance in 1921. The burden of pioneering work, proving the value of city planning, has fallen to six states—California, Massachusetts, New Jersey, New York, Ohio, and Pennsylvania. Their laws were all passed by 1915, Wisconsin following in 1917, and Oregon, Connecticut and Minnesota in 1919. While it is possible for isolated cities to get city planning legislation as they are ready for it, state-wide laws are desirable for every state. State departments, also, although they exist in three states only, are especially useful in coordinating and encouraging the work of local commissions.



THE COMPLETE SCHOOL PLANT DESIGNED FOR GREENFIELD, OHIO

School Building in Small Cities

By William B. Ittner

Architect and School Specialist, St. Louis, Mo.

IT is estimated that approximately half the total school enrollments of the country are distributed among the smaller cities. A careful study and the evolution of a sane solution to school-building problems of the smaller centers of population are therefore important and significant.

In the matter of general educational procedure, as well as school building progress, small cities enjoy several advantages over large cities:

1. There are usually less complicated political situations.

2. Parents and friends of education are in closer touch with the life of the schools.

3. Public interest in the needs and welfare of children is more quickly and keenly aroused.

4. Educational reform can be instituted more rapidly in the smaller cities, since less time is required to overcome tradition and inertia and to turn the wheels of the machinery into a new channel.

5. A regular school architectural department is not required, so there is abundant opportunity and freedom to call in the best school-building talent of the community at any time desired.

The fundamental in the solution of school-building problems in small cities, as well as in large ones, is centralization; to be more specific, the development of a restricted number of small segregated units. Educational expansion, the enrichment of the school plant, and sane economies can never be realized with a number of pure classroom schools that spring up from time to time to supply only immediate needs.

The need for centralization developed with the demand for an enriched curriculum. When school life became real living, the "1873 variety" of school building and equipment would not do. When gymnasiums, playgrounds, showers, auditoriums and workshops became essentials instead of luxuries, financial pressure compelled the consolidation of sites and buildings.

For cities of 5,000 to 8,000 inhabitants a single centralized unit for all grades should be sufficient. If the location is in proximity to the geographical center, distances should not be a matter of concern

unless the topography or general city plan is unusual. When schools are equipped with cafeterias, a half-mile of travel morning and evening for a few on the outskirts ought not to occasion hardships.

For cities with a population between 8,000 and 15,000, two units for all grades would be required. These would need to be properly zoned in order to equalize distances.

For cities with a population between 15,000 and 25,000, three complete units would be sufficient, or a different type of centralization could be adopted, namely, two elementary schools, including kindergartens, and one Junior-Senior plant, located in proper relation to the elementary units. With a total school enrollment of 4,000 or 5,000 pupils, two elementary schools, each with an approximate enrollment of 1,500 to 1,800 pupils, and a centrally located Junior-Senior plant, including 1,000 to 1,500 students, ought to insure educational efficiency and economy.

Objections have been raised to the complete school plants, including all grades, on account of the intermingling of high-school students with small children. The objections, however, have been founded on opinion rather than on fact. Our best private schools do not represent segregation of the older and the younger students in separate schools; they represent complete units. Segregation originated with the public school and has become traditional with it. It is reasonable to believe that since life is a continuous process, education should be likewise. There are no ostensible abrupt breaks in nature's development; then why in the educational procedure?

The Junior-Senior organization may also exist in a complete plant, as well as in the segregated one, if it is desired. There would naturally be a distinction between the upper six grades and the lower ones. But a complete separation would not follow, as in the segregated plant. Facilities such as playgrounds, gymnasiums, showers, pools, workshops and auditoriums could be used in common, thus giving continuous and maximum use to all educational quarters, and a rich educational environment to all pupils.

The School Plant in Greenfield, Ohio

Among the several small cities that have changed their building and educational pol-

icy so that all the children may enjoy equal educational advantages is Greenfield, Ohio, a small city with a population between five and six thousand. It is located in the heart of a rich agricultural community, but has also several thriving industrial enterprises. The city therefore includes the characteristics of the industrial as well as the non-industrial community.

Among the citizens of Greenfield is E. L. McClain, who has developed an unusual industry there. Several years ago Mr. McClain presented a practical gift to the city, a high school on a centrally located site. Though it is a medium-sized school, having an operating capacity of less than 700, it is unusually fine in efficiency of plan, rich facilities, beauty and substantial construction.

The building occupies a commanding setting on a four-acre site which gives complete parking and athletic field areas. It is three stories in height and is executed in brick with Indiana limestone trim. The corridors of the school and its library are veritable art museums with their mural decorations and careful selection of casts and paintings. That the rich working facilities have appealed to the young people of the community is evidenced by the fact that the high school enrollment has practically doubled during the eight years the school has been in operation. Parents in a number of the surrounding districts have voted their tax-duplicates to Greenfield, and a regular auto transportation for students has been instituted. It is indeed no wonder that the well-equipped gymnasiums, shower-baths and athletic facilities, the workshops and laboratories, and the elevating and ennobling atmosphere of the whole environment should make a striking appeal. And that the citizens are proud of it is evidenced by the community uses of its medium-sized but attractive auditorium. This is equipped completely, even with a pipe-organ, and has a direct community entrance.

The elementary school children have also been beneficiaries, first by their admission to the uses of the gymnasium and auditorium, and latterly by the school's service as a stimulus to the right kind of elementary plant. The most interesting fact about Greenfield is that although school progress was initiated by the McClain High School, progress did not stop there.



THE McCLAIN HIGH SCHOOL, GREENFIELD, OHIO

Built and equipped at a (pre-war) cost of \$250,000, this building constituted the stimulus to the centralization plan now being developed

The Elementary School

Fortunately, the principal elementary school of the city was located on its own restricted site immediately adjacent to the new High School. It was essentially of the "1873 variety," and its location served to emphasize and even to exaggerate its gruesomeness, barrenness and awkwardness to such an extent that the citizens finally concluded they could stand it no longer. Their self-respect came to their rescue and demands were made for a new elementary school. Mr. McClain added further impetus to the good resolutions by his decision to double the ground space and add a detached annex containing a swimming pool, agricultural laboratories, cafeterias, and more shops, to be used by all children. The completed project was to include on a site of 9 acres the original McClain High School, the new Elementary Unit and the Annex. The three detached buildings were to be connected by covered pergolas.

The new Elementary School will include as rich a working environment as the High School. But it will not need an auditorium, a pool, a circulating library and certain workshops, for those provided for the High School will serve all the children. Its regular use will be restricted to the first six grades and kindergartens, since the type of organization changed with the reformed building policy to what is technically known as the 6-6 plan. The upper six grades will

use the High School and Annex, and the lower six grades the Elementary School and Annex. The ground space will be apportioned for common use, as well as for individual use by the two schools.

In order to determine the size of its proposed Elementary School plant and the new Annex, the architect was requested by the Board and Superintendent to make the necessary survey of needs, both housing and educational. In this respect Greenfield established a wise precedent. Such study ought to constitute a prerequisite to the development of all building programs. It will automatically eliminate the altogether too frequent practise of building only for immediate needs, a policy which results in both inefficiency and waste.

The housing survey included an investigation of the past, present and estimated future growth of the community, and the educational survey the dominant educational policies, analysis of the curriculum, study of the organization, and the development of type of buildings most serviceable to the housing and educational requirements. The survey also included an analysis of comparative costs.

An Efficient, Economical Plant

September, 1923, will see the new consolidated group in operation, with approximately 1,600 children. Its cost, completed, will approximate \$700,000 for the two new

buildings and the additional ground, a cost which, compared with the requisite number of scattered elementary schools, represents true economy. It was estimated that three small elementary schools, each appropriating a block of city property, would be required to take the place of the one consolidated elementary school unit. Approximately \$1,000,000 would be required for the three segregated units and then there would be no provision for physical education, the out-of-door space would be insufficient, and there would always be lack of special quarters.

The Greenfield plan of concentrating its educational machinery in a central location, the foresight in the selection of an adequate site, and the planning of a plant where the principles of democracy can actually be set in motion through practise, and not merely taught, is undoubtedly a distinct departure in school building for most American small cities. Yet it represents what every small city can and ought to do if efficiency and economy are simultaneously desired.

The ultimate capacity of the Greenfield plant is 2,000 students. The original cost of the McClain School (pre-war) is \$250,000. The total cost of the entire group is \$950,000, equipped, which yields a per capita cost of \$475.

Even before the ultimate capacity of the present plant is reached, plans for the second unit will be initiated. In fact, the housing survey indicates that the future site should be procured immediately. And it may be that the trend of growth will be such as to suggest the beginnings of two new units. When the two new units are developed into completed plants, the pres-

ent group could form the Junior-Senior plant and the other two the elementary, if the tendency should favor this type of centralization. It is not recommended, however, until Greenfield has a school enrollment of at least 5,000 students and a city population of approximately \$25,000. The planning and construction in the present consolidated plant represent the height of elasticity, and alterations to fit it to Junior-Senior purposes will be simple and inexpensive.

There is an intimate connection between the building plan and the educational program of a school. The educational program and the operating device must always be determined in advance. The importance of employing an expert in school planning, one who is able to interpret the educational program in terms of the building plan, is now being realized. Although the cost of securing the services of an expert may be greater than the charges of the inexperienced, the resulting efficiency of the plant will indicate its real economy.

There are two methods of employing an architect—(1) competition, (2) direct selection. Competition to determine a selection should be conducted under the program formulated by the American Institute of Architects. But the competition can determine only architectural ability. Both executive ability and a knowledge of schools are required to carry out a successful school building program. Direct selection, therefore, of an architect who has proved his fitness to handle school buildings is by far the more satisfactory method—in fact, the only method that will insure building service to communities.

The Small Cost of a Municipal Music Week

According to the records of the National Bureau for the Advancement of Music, 94 cities have held city-wide observances of Music Week, and many such are being planned for the late winter and the early spring. It is a striking fact that the expense involved in these extensive celebrations is relatively small. In most cities of less than 50,000 population the outlay of the central committee was under \$200. In Birmingham, Ala., it was \$500; in Sacra-

mento, Calif., \$300; in Seattle, Wash., \$490. Even in San Francisco, where many special features were included, the expenditure was only \$3,600, nearly half of which was contributed from the city treasury. Most of the participation is on a volunteer basis by organizations, groups and individuals desirous of doing something for the musical progress of their city. There is a strong sentiment for a National Music Week beginning in 1924 and held annually.

Forward Steps in Municipal Affairs

Police Departments

"Appealing from Philip Drunk to Philip Sober"

DES MOINES, IOWA.—In December last, the Department of Police of Des Moines issued an order to take effect January 1, 1923, to the effect that all prisoners brought into the police station charged with intoxication be photographed while in their intoxicated condition and that a copy of the photograph be delivered to the prisoner on his release. On the back of the photograph is printed: "Take a look at this before taking another drink."

As an inducement for the prisoner to preserve his photograph, the following information also appears:

"If you are not returned to the station charged with intoxication within ninety days from the date of your present arrest, you may present this photograph to the Superintendent of Identification and the negative will be destroyed in your presence."

I keep an alphabetical list of all prisoners arrested for intoxication, and during my nine months in office I have found a number of old "drunks" who appear every few days. Some of these have as many as thirty convictions listed. Sometimes a released prisoner will be returned the same day he is released, charged with intoxication. The usual sentence in such cases is three days in jail.

One week is not a fair test of my theory, but in this week (the first week in January) not one photographed old "drunk" has returned. I expect, however, to get more results with men whose self-respect is not nearly so obliterated as is that of the old inebriate. An experiment of at least ninety days should either show the value of the theory or demonstrate its futility.

I have another system of curing inebriacy with which I have experimented for some time on a small scale, and which I may enlarge upon at an early day—and which justifies the hope for permanent results in curing drunkenness. This experiment covers a period of three years with several different classes of individuals.

As a first step, I find who is the most loved friend of the victim; it may be a wife, mother, father, sister, sweetheart or some benefactor. As soon as I determine who the loved one is, I write a letter addressed to this person, as follows:

"Dear Friend:

"I am writing you this letter to acknowledge my obligations to you. I realize the many kindnesses you have done me and mine. I also realize the worry and trouble, pain and humiliation I have given you in return for those kindnesses and that these acts of mine are due to liquor. My acts, while intoxicated, have caused you to be ashamed many times.

"I realize all this, and now, while I am perfectly sober and in my right mind, I will again abuse your confidence and run my hand through your heart-strings by taking a drink of the stuff that I know damns me and the innocent ones who love me. I do this deliberately and without cause, save that of being a 'good fellow' with other bums with whom I associate. I take this one drink knowing that it will call for a hundred more. I start on this debauch deliberately. I am unworthy of your love or friendship and repudiate both. A drunken debauch for me.

Your faithful friend, _____,"

This letter I enclose in a stamped envelope addressed to the friend of the "drunk," and enclose this in a larger envelope to preserve it. I then approach my inebriate friend and tell him that I will not ask him to quit drinking, but that I will ask him to carry this letter in his pocket and promise me that, before he takes another drink, he will read the letter, sign it and mail it to his friend. I always get this promise. I know of none who have mailed the letter nor abused the promise made to me.

A few days ago, a smiling, half-ashamed face appeared in my office. It was the first man to whom I gave such a letter. I had not seen him for three years. He looked prosperous. I did not recognize him. He pulled an old, worn-out letter from his in-

side pocket, handed it to me and asked if I would renew it. He told me he was tempted to drink many times, and some times under embarrassing circumstances to refuse, but that he always thought of his letter and it helped him to get past the danger place.

It appears to me that it is one of the first duties of an officer and of a citizen to help his weaker brother to get by the "danger places."

JOHN B. HAMMOND,
Chief of Police.

Mayors

A Sight-Seeing Demonstration of Municipal Projects

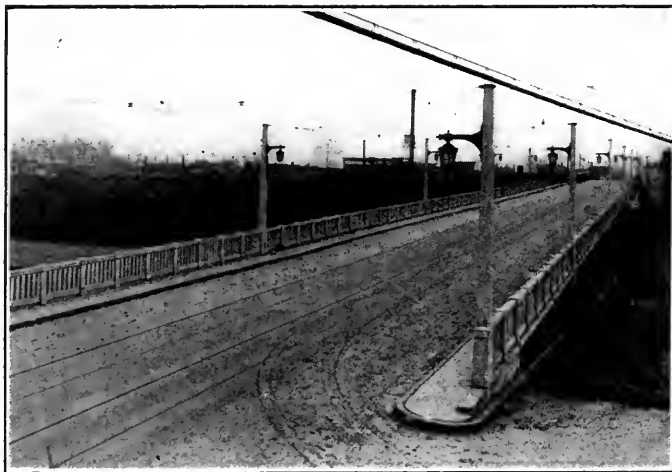
MEMPHIS, TENN.—The city of Memphis has undertaken several municipal projects of more or less magnitude. In order that these improvements and the need thereof might be understood, the writer recently arranged a sight-seeing tour, inviting the directors of the Chamber of Commerce and a number of prominent citizens to join us in occupying two large busses engaged for the occasion.

The thought prompting this tour was the lack of information upon the part of the general public as to the particular objects for which bond issues and other municipal funds are expended. For instance, at the last session of the Legislature, a City Planning Commission was

legally created. It employed a competent city plan engineer, whose first duty was the preparation of a major and a minor street program. Proper authority was obtained for the issuance of bonds to carry out certain improvement projects recommended by the City Planning Commission, upon the advice of its engineer, such as the widening of existing streets and the opening of new streets, with a view to providing additional thoroughfares to carry the heavily increasing auto traffic.

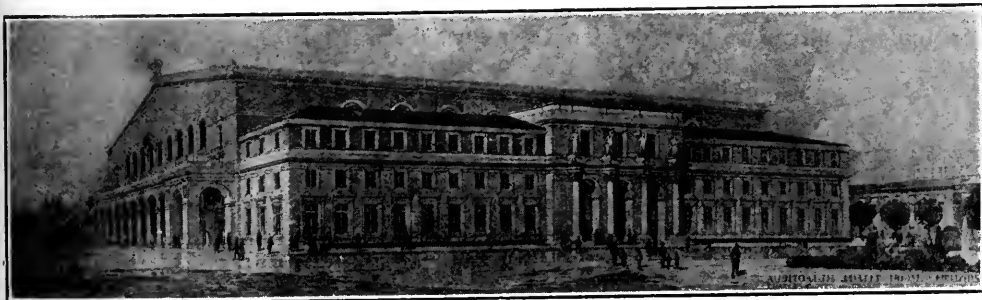
The city is engaged in building a municipal auditorium, to cost \$1,500,000, with a seating capacity of twelve to fourteen thousand, half of the cost to be shared by the county of Shelby. The reconstruction of our water-works system is also under way, at an expenditure of \$2,000,000.

Through the Park Board, the city has recently purchased several playgrounds and



NEW VIADUCT OVER ILLINOIS CENTRAL TRACKS,
MEMPHIS, TENN.

recreation centers, which are being developed, one of these containing an open-air swimming pool capable of taking care of



MUNICIPAL AUDITORIUM UNDER CONSTRUCTION IN MEMPHIS

3,000 people at one time. The city has also provided several commodious buildings which are used principally in connection with an annual fair. Between times these buildings are used for indoor sports of various kinds.

A long viaduct has just been completed, spanning the Illinois Central Railroad tracks and furnishing a large industrial section of the city with free and easy access to the residence section. The lighting fixtures on this viaduct were furnished by the Westinghouse Electric and Manufacturing Company.

The city is spending \$1,000,000 for the building of river terminals, to which the Federal Government has added \$450,000. These terminals are to be used for providing the Federal Barge Line with loading and unloading facilities. At the same time, the terminals are available to any other agency operating barges on the Mississippi River. These terminals will be used principally in connection with shipments moving in large tonnage, affording primarily an interchange between river and rail transportation.

The city is engaged in extending its school facilities by spending \$2,000,000 in putting up new buildings, including a high school to seat 1,000 pupils.

All these major improvements, together with a number of minor ones, were shown this group of business men, that they might understand how the municipal funds are being invested. The trip proved very beneficial.

ROWLETT PAINE,
Mayor.

Departments of Education

A Junior College Loan Fund

JOLIET, ILL.—During the last few years in our Junior College, we have developed what is known as the Joliet Junior College Loan Fund, the purpose of which is to assist students of marked ability who wish to complete their college and professional education but who have limited resources. The demands upon it have become so great that citizens of Joliet have taken it up and strengthened it by voluntary contributions. The help given to the recipient does not take the form of charity, nor does it pauperize his spirit. His character and

past achievements are investigated and, if he is worthy, he is given the requisite assistance.

Money is loaned in amounts varying from \$50 to \$500 per year according to the needs of the student during the time he is completing his college course. The loan is without interest while the student is in college. The day he graduates, the loan begins to draw 5 per cent interest until paid.

L. W. SMITH,
Superintendent, Joliet Junior College.

City Planning Commissions

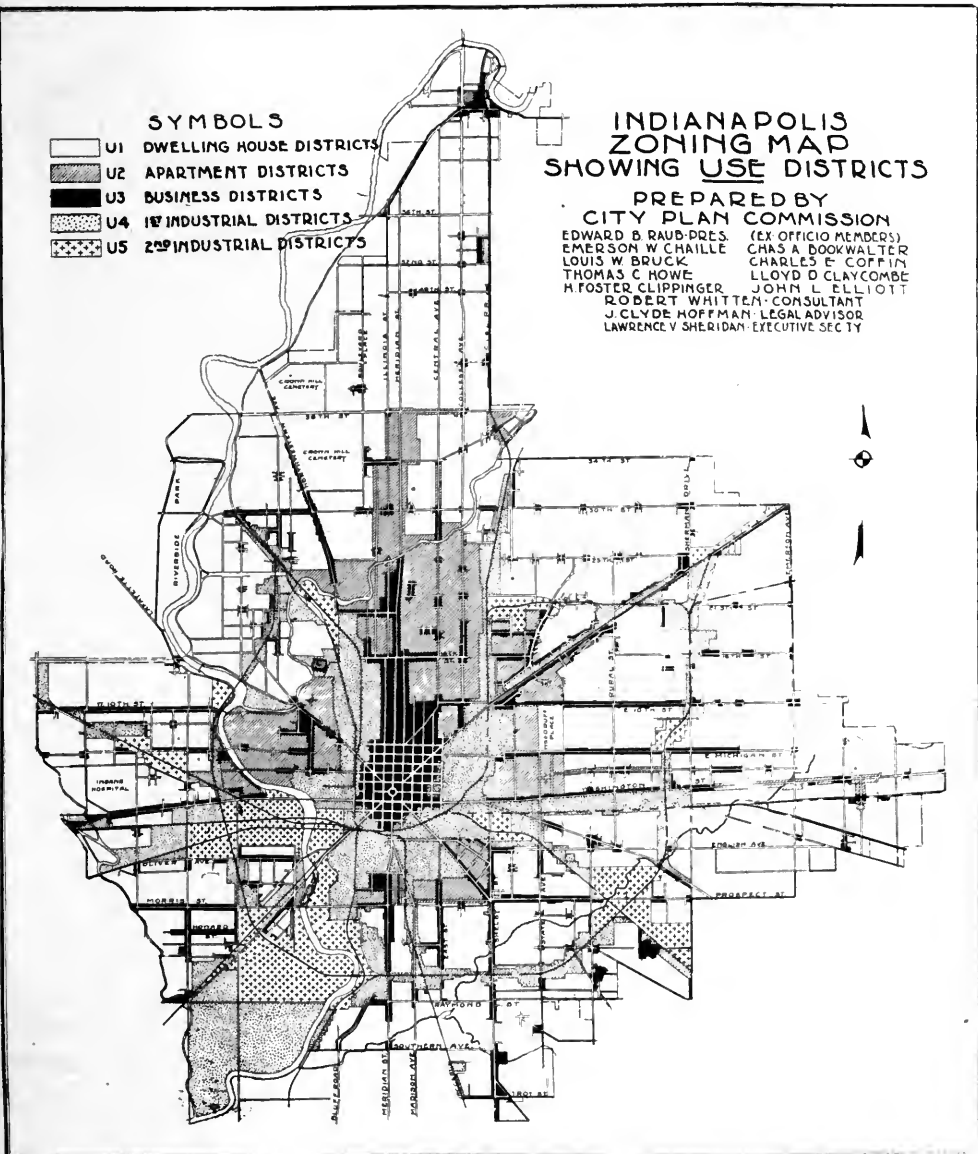
Indianapolis Adopts Zoning

INDIANAPOLIS, IND.—On December 20 the zoning ordinance of Indianapolis went into effect, having been adopted a month previously by a unanimous vote of the Council. This is the first zoning ordinance to be adopted by any Indiana city under the authority of the state enabling act of 1921.

The use districts established are: (1) dwelling-house; (2) apartment house; (3) business; (4) first industrial, and (5) second industrial.

The area requirements are designed to spread out the population, prevent congestion, and promote a detached house development. A lot area of 7,500 square feet per family is required in a limited section; 4,800 square feet per family in the less developed areas around the borders of the city; and 2,400 square feet, or two families to the ordinary 40 by 120-foot lot, throughout the rest of the dwelling-house areas. In much of the area in which apartment houses are permitted, 1,200 square feet per family is required; in limited portions of the apartment house districts only 600 square feet per family is required; and in very limited areas suitable for hotels and elevator apartments, there is no limit as to the number of families that may be housed on a given area. Front, rear and side yards are required in all residence districts.

In the height district allowing maximum height, the limit is 180 feet, except that for a street 100 feet or more in width the limit is 200 feet. As practically all the streets in this district are 90 feet in width, the limit is really based on twice the street width. Washington Street, with a width of 120 feet, is the only street where the 200-



ACCOMPANYING THE INDIANAPOLIS ZONING ORDINANCE ARE THREE LARGE MAPS OF THE CITY, ONE OF WHICH IS REPRODUCED ABOVE. THE OTHER TWO SHOW THE AREA REQUIREMENTS AND THE HEIGHT LIMITATIONS

foot height will be allowed at the street line. Greater height will be permitted with a setback in the ratio 1 to 3; but this setback must be from all lot lines as well as from street lines. The City Plan Commission first recommended a height limit of 150 feet, but later agreed to the 180-foot limit as a compromise with the down-town property owners who asked for the retention of then existing limit of 200 feet.

Work on the zone plan was begun by the City Plan Commission in January, 1922, with Robert Whitten, of Cleveland, as consultant. A careful zoning survey was made and many conferences were held before the ordinance was finally submitted to the Council. The zoning ordinance had the active support of the Chamber of Commerce, the Real Estate Board and other civic bodies.

LAWRENCE V. SHERIDAN,
Secretary and Engineer, City Plan Commission.

Official Recognition of Pittsburgh's Citizens Committee on City Plan

PITTSBURGH, PA.—“A great event in the life of Pittsburgh” is the *Pittsburgh Post's* designation of the forward step taken by the City Council of Pittsburgh in December in recognizing officially the Major Street Plan and the Playground Plans of the Citizens Committee on City Plan of Pittsburgh, and agreeing to work towards those plans in future improvements. And the *Pittsburgh Sun* states editorially that the City Council by this action “has affirmed the first and only far-reaching Pittsburgh program of civic growth.”

Two resolutions were adopted by the City Council on December 11. The one covering the Major Street Plan reads as follows:

Whereas, The Citizens Committee on City Plan of Pittsburgh has made a detailed study of the main thoroughfares, or so-called major streets of the city of Pittsburgh, and has formulated and published a Major Street Plan, consisting of an organized system of thoroughfares for traffic circulation; and

Whereas, This Major Street Plan was based upon all available data as to present and future needs of the city and is recognized to be a thorough study of the principal streets of the city; and

Whereas, This Major Street Plan has been highly commended by the Department of Public Works and the Department of City Planning of the city of Pittsburgh, and has met with the general approval of civic organizations and individual citizens throughout the city;

Now Therefore Be It Resolved, That the Major Street Plan of the Citizens Committee on City Plan, dated September, 1921, be filed with the Department of City Planning and the Department of Public Works and that these departments, the officials and engineers of the city be instructed to take said Major Street Plan into consideration in the planning, development and improvement of the main thoroughfares of the city, and, in all recommendations and reports to Council with reference to the planning, development and improvement of such streets of the city, to cite and discuss the recommendations of said Major Street Plan in connection therewith.

A similar resolution was adopted with reference to the committee's plan for the development of playgrounds and athletic centers.

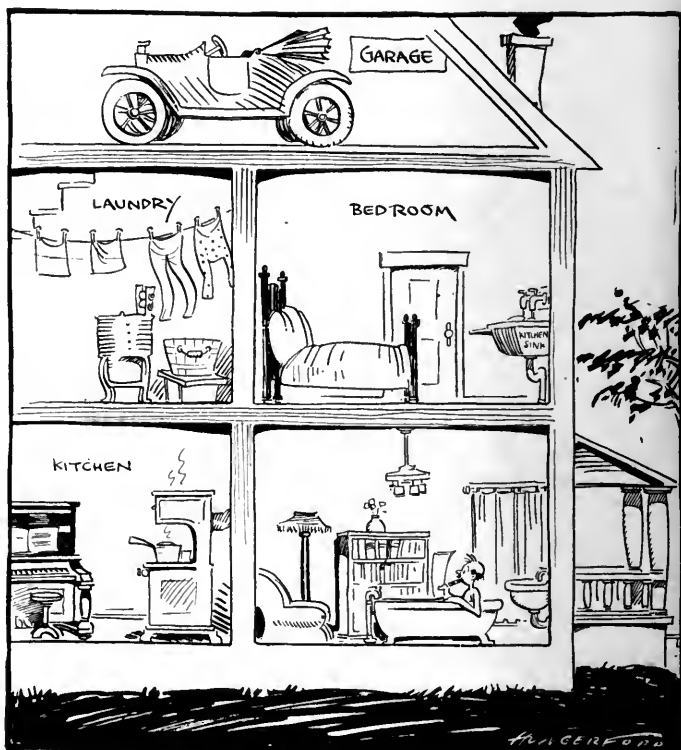
The Pittsburgh Plan, it is expected, will be complete some time during the spring of 1923. Subcommittees are now

completing their studies, and will soon present detailed recommendations as to how the city may meet its needs in the way of rail and river transportation, transit, and parks.

GEORGE KETCHUM,
Executive Secretary, Citizens Committee on City Plan of Pittsburgh.

Fun and Crime

In retracing the tortuous path of the youthful criminal, it is seldom found that the trail leads back to the playground, the diamond, the athletic field or the community center. In investigating crime, with especial reference to the work conducted by the Chicago Crime Commission, I have been impressed with the fact that a very large percentage of those apprehended have been strangers to the influences exerted by such activities as those mentioned. The young delinquent has, in the majority of instances, grown up in the atmosphere of the saloon, the poolroom and similar hangouts.—HENRY B. CHAMBERLAIN, *Operating Director, Chicago Crime Commission.*



THE SORT OF HOMES WE SHOULD HAVE IF OUR HOUSES WERE LIKE OUR CITIES

A cartoon used by the Citizens Committee on City Plan, of Pittsburgh, in its campaign of cooperation with the official City Planning Commission, for the enactment of a zoning ordinance by the City Council

The Construction and Operation of the Sewage Pumping Station at Schenectady, New York

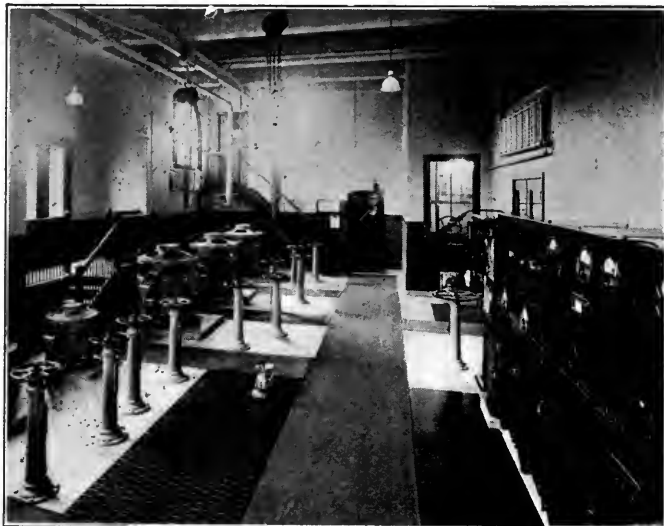
By John V. Lewis

Superintendent, Bureau of Sewage Disposal, Schenectady, N. Y.

WHEN, in 1913, the city of Schenectady prepared plans for additions to its sanitary sewerage system and for the installation of a sewage treatment plant, three methods of bringing the sewage flow to the plant were considered. These were: (1) a gravity intercepting and outfall sewer system; (2) a high and low level intercepting and outfall sewer system with pumpage of the sewage of the low level system; and (3) a gravity intercepting and outfall sewer system for which all of the sewage flow would have to be pumped at the treatment plant.

Owing to the topography of the city, the first plan could not be carried out, and of the latter two plans, the second seemed to best fit both the present and immediate future needs of the city. Accordingly, plans were prepared for the installation of a sewage pumping station and the low level sewerage system was so designed that the sewage flow of the eighth, ninth, and tenth wards and the General Electric Company plant would be brought to the station by a 36-inch interceptor, and the sewage flow of the first ward by a 15-inch interceptor. The sewage flow was approximately that contributed by a population of 30,000 persons and was estimated as about 4,800,000 gallons per day, including that of a day population of about 18,000 persons at the General Electric Company plant.

The site selected for the location of the pumping-station was at the foot of North



INTERIOR OF SEWAGE PUMPING STATION, SCHENECTADY, SHOWING MOTORS AT LEFT AND SWITCHBOARD AT RIGHT

Ferry Street and adjacent to the Mohawk River. At this point was located the abandoned water pumping-station which from 1871 to 1897 supplied the city with water from the Mohawk River. In the construction of the new station, it was necessary to tear down and remove the old water pumping-station. Subsequently the city purchased the properties on either side of the new station and bordering the river, and added the land to its park system. The station, therefore, stands in the center of what is now known as Riverside Park.

The Substructure

The substructure is rectangular in plan, 63 feet in length by 35 feet in width, and is constructed of reinforced concrete. It contains two wet wells or suction pits, a dry well or pump room, and a transformer pit.

The wet wells are placed in line along

the river side of the substructure and are interconnected by a 24-inch sluice-gate set in the division wall. The 36-inch interceptor enters the substructure at its west end and is connected to the larger of the wet wells, while the 15-inch interceptor enters at the east end and is connected to the smaller wet well. A stationary rack, whose upper end rests against a raking platform, is provided at the inlet end of each well. The racks are constructed of 2-inch by $\frac{3}{8}$ -inch iron bars, so spaced as to give $1\frac{1}{2}$ -inch clear opening between bars, and are set 60 degrees with the horizontal.

The dry well which contains the pumps is rectangular in plan, 40 feet in length by 16 feet in width, and parallels the wet wells. The pumps are placed in line along one side of the dry well, and on the opposite side is located the 30-inch cast iron force main to which the pumps are connected and which leads up North Ferry Street for a distance of 550 feet and connects with the Front Street gravity interceptor.

The transformer pit is placed at the Ferry Street end of the substructure, slightly above and between the dry well and the small wet well. It contains the power transformers for reducing the line voltage from 2,300 volts to 244 volts.

The Superstructure

The superstructure was designed by the Bureau of Engineering with the idea of providing not only a structure to house the pumping units but to please the eye as well. It consists of a first floor or lower half of massive construction and a second floor or upper half of light, open construction.

The lower half is constructed of reinforced concrete overlaid with stucco. The entrances are a combination of Indiana and artificial limestone. All copings are composed of genuine limestone and all visible roof surfaces overlaid with Spanish tile. Tapestry brick trim is placed around the window openings and elsewhere, and the appearance of the superstructure is further enhanced by the addition of an ornamental belt cornice of wood and Spanish tile. The window openings are located above the flood stage in the Mohawk River, and during such periods the door openings are closed with wooden bulkheads.

The upper half is constructed in the form of a parapet wall with a stone coping.

Ornamental wooden columns support the frame roof, and false rafters project beyond the roof proper to give a pergola effect.

The first floor is divided into a large motor room, a screen pit room, and a boiler and coal storage room for the steam heating system. The office and toilet rooms are placed on a mezzanine floor directly over the heating plant. Access to the entrances and mezzanine and second floors is furnished by means of ornamental iron stairways.

The motor room contains the prime movers of the pumping units, the power and lighting control switchboard, an air compressor for furnishing air for cleaning purposes, a sump pump for emptying the sump in the pump room, and the instruments for recording the quantity of sewage pumped and the level of the sewage in the suction pits. Both the interior of the motor room and the machinery therein have been painted in such a way as to give them a very pleasing appearance.

For several years after the station went into operation, the large space on the second floor was not utilized. Then it was decided to equip it as a baby welfare station under the direction of the Bureau of Health. From June to September the station is open for the convenience of the poor mothers of the neighborhood.

The Pumping Units and Appurtenances

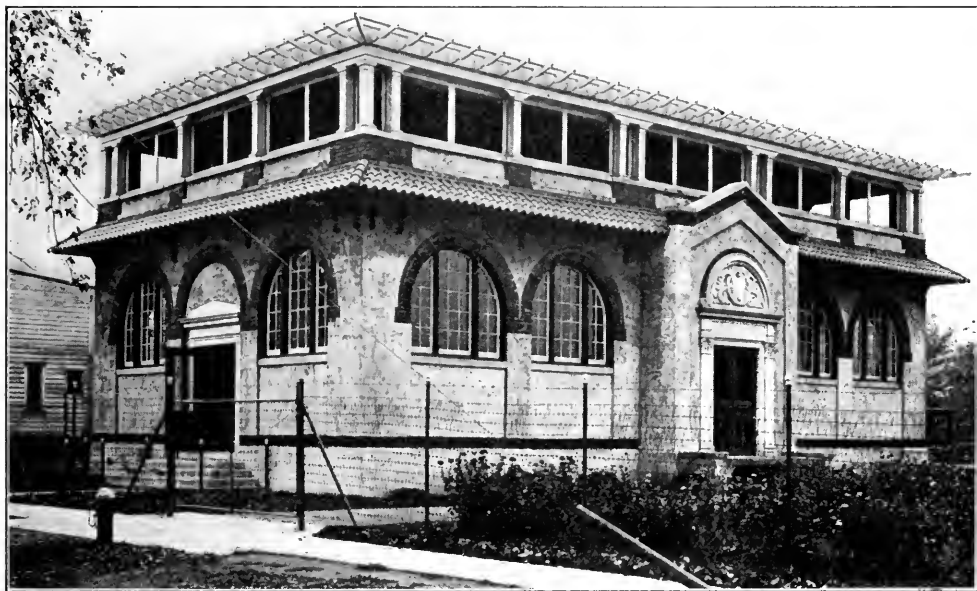
The main pumping units are three large and two small electric-driven centrifugal pumps of the vertical type. The pumps are all of the single-suction, open-impeller, volute type and equipped with iron impellers having large water passages, extra heavy steel shafts, roller thrust bearings, flexible couplings, and handhole openings on both the pump casings and suction elbows. Two of the pumps also have renewable suction discs which can be easily replaced when worn. The prime movers are standard vertical induction motors, the large pumps being driven by motors of the external resistance type, while the small pumps are connected to motors of the squirrel cage type.

The large pumping units consist of two American Type Q Special 15-inch and one Morris Special 12-inch centrifugal pump. The former are rated 3,500 g. p. m. at 450 r. p. m. against a total head of 20 feet,

while the latter is rated 2,800 g. p. m. at 450 r. p. m. against a total head of 23 feet. The small pumping units consist of two American Type Q Special 7-inch centrifugal pumps. These pumps are rated 700 g. p. m. at 600 r. p. m. against a total head of 20 feet. The motors connected to the large pumping units are General Electric Form M motors rated at 35 h. p., while those connected to the small pumping units are General Electric Form K rated at 10 h. p. The large pumps are equipped with 18-inch suction and discharge pipes, while the small

voltage and power consumed. The last panel contains a recording wattmeter for checking maximum demand, the remote control switches for the large pumping units, and a time switch by means of which any one of the large pumping units may be automatically placed in service.

Additional instruments include indicating and recording liquid level gages for determining the level of the sewage in the suction pits and the head on the pumps, and a Type M Venturi register for determining the quantity and rate of sewage pumped.



EXTERIOR OF SCHENECTADY SEWAGE PUMPING STATION, SHOWING ATTRACTIVE APPEARANCE OF BUILDING

pumps have 10-inch suction and discharge pipes. All units operate at constant speed, the large units being manually controlled and the small units arranged for float switch operation.

The power and lighting switchboard consists of seven panels, five of which are for the control of the pumping units. All motor panels have mounted on their face the meters, overload and time limit relays, and the magnetic contactors, while on the back are the compensators and external resistance for starting and pumping units. Each panel is self-contained and arranged for remote control. In addition, there is a panel containing the main power feeder switch, the lighting switches, and electric meters for the determination of the line

The 30-inch sewage meter tube is placed in the force main just outside the building and is enclosed in a concrete vault below the street level. The pressure is transmitted from the tube to the register by means of a system of piping and oil seals filled with kerosene oil.

The air compressor for furnishing air for cleaning purposes consists of a duplex piston type compressor direct-connected to an induction motor. The capacity of the unit is 15 feet of air per minute at a maximum pressure of 90 pounds per square inch, and the motor is rated at 5 h. p. The unit is provided with a control panel which maintains the pressure of the air in the supply tank at any predetermined point.

The sump pump consists of a 1½-inch

Alberger horizontal centrifugal pump direct-connected to a small induction motor. The capacity of the pump is 50 g. p. m. at 1,800 r. p. m. against a total head of 23 feet, and the motor is rated 1 h. p. This unit operates under a high suction lift, being mounted on the motor room floor.

Operation

The station went into operation in January, 1915, or about the same time that sewage was first diverted to the sewage treatment plant. It has been in continuous operation since that time, with the exception of the periods when changes were being made to improve the operation and efficiency of the pumping units or when the flow could not be treated at the treatment plant.

The changes and improvements to the station proper have not been extensive, consisting mainly of the installation of partitions to separate the motor and screen pit room; the mezzanine floor and stairways for the office and toilet rooms; the hoisting equipment for lifting the motors and transformers, the steam heating system; and the painting of the pumping units and the interior of the motor room.

The additions and improvements to the pumping machinery and appurtenances have been more numerous and cover a longer period of time, being adopted only after experiment had shown them advisable. They include the changing of the shape of the suction pits and the installation of sluice-gates and a by-pass to divert the sewage flow from the station to the river; the installation of a new type of cover and impeller and heavier shaft in four of the centrifugal pumps, thereby improving the operation under the severe service encountered in sewage work; the removal of one 15-inch pump and the installation of the 12-inch pump to handle the night flow, thereby obviating the need for throttling the discharge; and the installation of the air compressor, sump pump, Venturi meter, wattmeter, liquid level gages, and various other electrical and mechanical equipment.

The station has a total pumping capacity of 16 million gallons per day, but the average dry weather flow on a 24-hour basis amounts to $4\frac{1}{2}$ million gallons, or approximately that estimated at the time plans for the station were prepared. The maximum

dry weather flow sometimes approaches a rate of 7 million gallons per day, and the minimum or night flow very rarely goes below a rate of $2\frac{1}{2}$ to 3 million gallons per day. During the short periods when the river is at flood stage, the pumps are not operated and the sewage flow is by-passed to the river.

During the first five years of operation, sewage was pumped throughout the twenty-four hours of the day, and during the last three years of this period, no operator was in attendance from midnight to 8 a.m., the 12-inch pump successfully handling the night flow. In case of power failure, the pumping unit in use automatically shut down and the sewage flow was diverted through the by-pass to the river. When power service was resumed, the pumping unit automatically started up again and pumping continued as before. For the past two years, the pumps have been operated from 7 a.m. to midnight, analyses of composite samples of the crude sewage collected during the other seven hours of the day indicating that it compared favorably with the trickling filter effluent at the treatment plant. By following this procedure, not only has the cost of pumping been considerably reduced, but the treatment plant, which has always been overloaded, has been relieved of some of its load.

The station, complete as it stands to-day, represents an investment of about \$60,000. To date, the cost of operation has varied somewhat from year to year, depending on whether or not the pumping units have been operated continuously. On the basis of pumping over a 24-hour period each day, the cost of operation amounts to approximately \$10,000 per year. The major item of such cost is that for power service, which, at the present maximum demand and consumption rates, figures about 2 cents per kilowatt hour. The operation of the station is looked after by two regular operators and an extra man who spends two days per week at the station and the remainder of the week at the treatment plant.

Overcoming Troubles in Operation

The troubles encountered during eight years of operation have not been serious and have been confined mostly to the suction pits and pumps. The shape of the suction pits was changed to provide hopper-

shaped bottoms and divert the settling solids in the crude sewage flow directly under the inlet to the suction pipes. It was found that the type of pump first installed was not adapted to sewage pumping work under the conditions existing here, and the changes already mentioned were accordingly made. With the installation of impellers having larger water passages, the bar racks with $\frac{3}{4}$ -inch clear openings, originally placed in parallel with the existing bar racks, were removed. Very little clogging has occurred, and the cost of hauling the screenings has been very materially reduced. At the present time, the racks are raked at 4-hour intervals during the day and once at night. The screenings are placed in metal cans with tight-fitting covers and stored for a period of three to four weeks. With the original arrange-

ment of racks, it was necessary to haul the screenings away each day.

Very little trouble has been experienced with the electrical equipment, although there has been occasional burning out of the coils of the magnetic contacts and compensators. It is believed that this trouble is due to the use of a higher voltage than that for which the equipment was designed.

The credit for the successful operation and pleasing appearance of the station rightly belongs to the operators in charge of the station during the time stated. Fortunately, they have been skilled mechanics and have taken a great deal of interest in their work. Their efforts have not been entirely unrewarded, for the station is looked upon with pride by the citizens of the city.

The Realtor and the Community

By Henry R. Brigham

Counsellor at Law, Boston, Mass.; Chairman, Housing Committee, National Association of Real Estate Boards

A REALTOR is a real estate broker, operator, or manager who is a member of a real estate board or exchange which is a member of the National Association of Real Estate Boards. The Association was organized to put the real estate business on a high ethical professional basis, and every individual member who wishes to retain his membership must live up to a code of ethics, just as members of bar and medical associations are required to do. It is also constantly investigating and recommending the adoption not only of improved methods of transacting real estate business, but ways and means for protecting and benefiting real estate interests. It acts as a clearing-house for all the progressive real estate boards of the country.

Multiple listing and the licensing of brokers are two of the progressive methods of doing business that are now being advocated and adopted. The Association has committees studying legislation, taxation, city planning, appraisals, subdivision, financing, and "Own Your Own Home" campaigns, and it is now considering the forma-

tion of a Research Bureau to gather the statistics which will be of value to these committees, and to advise the Association and local boards in all matters of public interest affecting real estate.

There is no class of business or professional men to whom the best interests of a community are more at heart and of more vital consequence than to the realtors. A town or city, like an industry, is always either dying or growing, and the realtor's success depends on its growth. Everything he does or does not do that hinders the growth of a city, or of any part of it, hurts his business in the long run. By growth of a town or city is meant not merely growth of population, business, or area, but growth of prosperity, and improved living and working conditions, resulting in better health and greater happiness of its population. A city or town with a growing business and population which does not wisely take care of that growth and therefore finds itself burdened with the problems of bad housing resulting in poverty, vice, and crime, will not have property values or general prosperity equal to those of a city which

has similarly grown but which has had vision and, by proper building and zoning ordinances, and by wise real estate and housing developments, has kept its inhabitants well housed, its jails and poor-houses empty, and its streets and buildings inviting to visitors. Real estate values quickly reflect good and evil influences, and no one in a community is better qualified by experience to judge the value of any proposed community development than the progressive realtor.

Realtors should therefore lead in all matters of community interest which affect real estate, but they often do not do so because their fellow citizens believe that they have only selfish interests. Their National Association is therefore now striving to have them take the part that they are so well qualified to take, and to have them deservedly gain the confidence of their communities, with consequent leadership. The proposed Research Bureau is designed to help in this matter by being able to prove by indisputable facts the actual results of laws, policies, plans, and methods for the benefit of communities considering similar propositions. If realtors can show in dollars and cents as well as in evidences of increased or decreased appearance, health, or happiness of a community the direct results of any reforms, they can help their communities in adopting or avoiding similar reforms and prove their points without question of selfish interests.

Zoning from the Realtor's View-Point

Progressive communities everywhere are considering zoning and city planning, and in most cases are being advised by experts whose interest in real estate values is more or less a second consideration. Wise zoning or city planning should not only have direct results in the health, comfort, and happiness of a community, but it should as a whole raise property values. If, for instance, an individual owner should object because he is deprived of the possibility of a prospective profit through the erection of an apartment house in a neighborhood where apartment houses are prohibited, the zoning is not wise unless the gain to the neighborhood more than offsets the individual's specific loss or unless the property of the individual is made of more value for the purpose for which it is restricted. In

any large city a real estate board can give expert advice as to zoning plans and can by joint action eliminate any question of individual selfish interests. The National Association of Real Estate Boards is cooperating wherever possible in developing zoning and city planning, and a former president of the Association is one of Secretary Hoover's zoning committee, which has recently published a zoning primer.

The recent high costs of building have resulted in a tendency to break down building restrictions and to weaken building codes. Unwise building restrictions and unreasonable provisions in building codes are too common, and amendments in both should be made in many cases, but shoddy construction and unsanitary or unsightly buildings are evils which realtors know result in lowering real estate values. The National Association has therefore taken an active interest in standardizing building codes in order to get the best results with the least waste and to uphold building ordinances that are wisely designed to protect property values. They suffer the unjust charges of being "profiteers" by fighting against measures which will result in temporary gains to a few tenants at the cost of far greater losses in the end to the community. In the same way they have fought rent legislation which has been designed to give profit to tenants but which hinders natural growth, to the permanent detriment of said tenants as well as of the community as a whole. These are all matters where facts and figures properly compiled by a Research Bureau can be of great value to any civic body interested in community welfare.

Every local real estate board which is a member of the National Association has the backing of that Association, which means that it can call to its aid the expert advice of the Association's leaders and get the full benefit of the experiences of all the other 464 or more boards of the country. Prejudice against "real estate men" still exists, as it does against many other classes of men, and it also is doubtless unhappily justified in some individual instances; but the sooner other civic bodies recognize what *realtors* stand for and give them more of the share in the civic responsibilities which they should bear, the sooner can progress be made in the growth of any community.

The Scajaquada Creek Drain

Buffalo, N. Y., Is Doing Away with a Public Nuisance Through the Construction of an Underground Drain

By Patrick Kane, Jr.

Buffalo, N. Y.

THREE years ago, at a general election, the people of Buffalo declared the Scajaquada Creek a public nuisance and voted in favor of having a large portion of it—that which flows through the east side residential district—converted into an underground drain. This, in substance, is now being taken care of.

The Scajaquada Creek proper flows through the entire north side of the city.

perts reckoned it a hard job, made difficult through the various obstacles to be overcome. Chief among these were the water and the rock problems. Hard, compact limestone was encountered just below the surface of the creek-bed. The drain itself, or rather that portion of it now under construction, is 6,000 feet long. And the average depth of rock to be excavated is 8 feet.



THE END OF THE FINISHED ARCH OF THE SCAJAQUADA CREEK DRAIN

Estimated approximately, the length is about six miles. The creek pursues a winding, diagonal course from east to northwest, emptying into the Niagara River. It serves as a non-sewerage drain to the adjacent territory, taking care of the outlying east side especially, where, because of land development, modern drainage has not yet been installed.

In accordance with the wishes of the people, action was begun on this underground drain at once. A survey was made, plans were drawn up and bids let, and the work started the following spring. Ex-

The water problem presented was to take care of the normal water flow while construction was going on. For the most part, pumps were used which drained this water into city sewers; for the rest, it was found necessary to cut through the strata of rock in such a way that there would be a continual channel through the broken stone refill. Of course, in wet weather this rock work had to be suspended until the water subsided.

The drainage area of this creek is 22.40 square miles. During the summer months, the volume of water handled is very slight,

but during the wet season the depth increases to as much as 8 feet. Estimating the width of the creek-bed at 45 feet, one appreciates that the volume of water carried by this creek is considerable.

In drawing up the plans for this work, Metcalf & Eddy, consulting engineers, of Boston, Mass., after carefully studying the project, submitted a report on three different types of drains as practicable for a work of this kind. The first type called for a dish-bottomed drain with side-walls, but no roof. This type was not recommended, and the city rejected it, as scum and refuse would collect on the surface of the open water in warm weather; also, the drain would form a breeding ground for mosquitoes. It would also have been necessary to bridge all street crossings for traffic purposes, thus entailing further expense.

The second type considered was a flat-bottomed drain with side-walls and arched roof. The dimensions of this drain were considerably smaller than those of the first type, and it necessitated a detention basin covering, say, 500 acres of land at the upper

end to take care of the abnormal flow of water, which this drain was incapable of handling during the wet season. The expense of buying the land to construct this basin would bring the total cost of this type of drain up to that of the third type. The city therefore rejected the second project as unsuitable.

The third project called for a flat-bottomed drain with side-walls and roof-arch similar to that of the second type, only larger. This type of drain was to be 14 feet high from the floor of the center of the roof-arch. The average width was 28 feet, and in some places it ran as wide as 33 feet. This drain is capable of handling a water flow of 5,600 cubic feet per second past a given point. This capacity was chosen after a careful study of rainfalls and flood flows, with the intention of making it adequate for such a flood as would probably occur about once in 25 years, after the district has reached such a point of development as it may attain in about 25 years. With the development in its present status, the critical flood would probably be met

only once in 50 or 100 years. This is the drain selected by the city of Buffalo for Scajaquada Creek.

Bridges Eliminated

This drain does away with all bridges. In the present section under construction, six bridges have been removed, one of these a splendid, three-arch, massive stone structure which carried Humboldt Parkway. All streets crossing the new drain will be laid down over the arch, which will be constructed to sustain a load of 1,000 pounds per square foot, including its own weight.

The Buffalo dredging Company, contractors, are in charge of the construction of the new drain. They are using the best materials obtainable, every lot or shipment received



BUILDING THE SCAJAQUADA CREEK DRAIN IN FLORIDA STREET, BUFFALO

being thoroughly tested several times before being used. For the concrete work, Pennsylvania portland cement is being used, the testing of which is in charge of the R. W. Hunt Company. All steel used is tested by the Pittsburgh Testing Laboratories.

The side-walls and roof of this drain are of concrete, reinforced with two rows or layers of $\frac{3}{4}$ -inch bars. These bars run horizontally as well as vertically, and where they cross each other are securely wired together so as to be held in place till the concrete is poured. On the top of the arch, about 9 inches separates the layers of iron reinforcement. In the side-walls, about 14 inches separates the rows of iron work. The arch throughout was designed for unusually heavy loads because of the probability of street crossings in locations which could not be foreseen, and also because of the possibility of the storage of heavy material over the drain in certain localities. The thickness of the concrete in the roof-arch is 12 inches at the center, sloping out to 21 inches near the side-walls. The side walls are 18 inches thick, and are backed up by a solid, natural wall of limestone. The floor is of smoothly finished concrete, laid directly on the rock, the smoothness of the floor facilitating the flow of water by offering no obstacle on which sediment or silt can gather.

To fit the topography, the slope of the lower section of the conduit was made .0017 on tangents, and compensation for curvature amounting to .001 additional was provided on curves. In this section of the conduit, the velocity at times of flood discharge is expected to be about 15 feet per second, and under high velocities the loss of head due to curvature is known to be considerable. The upper section, construction of which has not yet been begun, will be built on a slope of .0008 on tangents and .0011 on curves. In this section, the maximum velocity will not exceed 11 feet per second.



A CONSTRUCTION SCENE IN THE SCAJAQUADA CREEK DRAIN DURING WET WEATHER

The increase in velocity at the change of grade will involve a loss due to the additional velocity head required. This has been provided by a drop in the conduit, to be accomplished in a distance of 50 feet horizontally.

The capacity of the conduit, as designed, varies from 3,130 cubic feet per second at the upper end, to 5,620 cubic feet per second at the lower end, the total length being 15,380 feet. The drainage areas tributary to the creek are 16.15 square miles at the upper end of the conduit, 22.40 at the lower end, and 23.95 at the mouth of the creek.

In the slope or grade given this drain, the amount of rock excavation was kept as low as possible; at the same time, sufficient cover was provided so that the arch might be protected and the small water pipes and drains could be laid below the surface. All large water-mains and sewers that cross this drain will be raised and laid on the top of the arch, and will then function by the siphon method.

Manholes are provided at street crossings, giving access to either end for entrance. Weepers of 5-inch vitrified pipe are provided every 50 feet at the level of

the bottom of the side-walls, to take care of water seepage through walls.

The forms used in the construction of the concrete arch are of the movable type—on wheels and tracks. They are of steel and can be moved as the work progresses. In constructing the side-walls, steel forms were used, while for the overhead arch work the top surface of the forms was of wood. The wooden forms are well oiled, and the seams where the sections of the forms join together are covered with strips of thin sheet-iron to prevent the fresh concrete from leaking through. Once the concrete is set, these forms can be loosened, dropped down and run out from under the arch.

Considerable curvature necessarily enters into the location of this drain. With but six exceptions, the deflections have been made with curves of 210 feet radius; and most of them represent changes in direction considerably less than 90 per cent. The six exceptions are: 95 feet radius, 110 feet, 146 feet, 154 feet, 260 feet, and 260 feet.

One portion of the old creek, approximating 1,200 yards, formerly ran a crooked course parallel to Florida Street. At one

end, this creek ran directly alongside the street, and at another point it was over 100 feet from the street. The engineers, in laying out the course of the new drain, saw here a chance for improving the new course over the old one; so instead of following the course of the old creek-bed, they made a new course directly through Florida Street. The street was dug out and the new arch-drain built within it. The old water-course was then filled in, thus making additional land available for the use of the abutting property owners, should the city so authorize.

The cost of this drainage work is rather high on account of the existing market prices of materials and labor. In view of this, the city decided to divide the Scajagada Creek job into three—possibly four—sections, and to proceed with the construction of each section as the financial condition of the city allows. The money to defray the expense of this improvement is to be raised by taxation, general or local, to be decided by the city authorities at a later date. In the meantime, the work on the first section is nearing completion—6,000 feet of underground drain, built at a cost of \$1,449,000.

Rubber Roads Invented in England

Special Type of Rubber Block Pavements Developed for Traffic Running on Rubber Tires

A NEW type of rubber composition paving block has been developed in England which it is claimed can be placed on the market at a price to compete with the ordinary creosoted wood block, when it is taken into consideration that the composition blocks are noiseless and have an estimated life of 15 years. Two types of blocks have been produced, one made with a core, surfaced with a ½-inch hard vulcanized rubber, and a second consisting of the core only. The principal ingredients of the core, which have been patented, are rubber, jute, and china clay. These ingredients enable the whole block to be vulcanized in one piece, as it has been found by experiment that the block should be a solid mass and not made up of separate superimposed portions. When the block has been hollowed out and filled with concrete or wood to reduce cost, it has been found that the rubber surface creeps and shows wear on the underside at the place of contact and not on the surface.

In an experiment with a wooden block upon which a steel plate was placed as a seat for a rubber surface, it was found that the heavy traffic turned up the steel plate at the edges. At St. Pancras railway station, London, the covered way under the hotel is surfaced with a sheet of rubber of about ½-inch thickness. It is claimed that there is a tendency for the rubber sheet to "lick up," so that it must be pegged down from time to time. As a result of their experiments, manufacturers have decided that the separate solid blocks give the best results. The block proposed is similar to the wooden block used ordinarily for street paving, and measures 9 x 4½ x 3 inches.

Up to the present time it has not been possible to manufacture rubber blocks at less than three times the cost of wood paving, which is about \$5.40 per square yard. The Gould block core is claimed to be made at 4 cents per pound, and it is expected that the price of paving will not be more than \$13.34 per square yard.

Combustion of Coal in Boiler Furnaces

A Practical Talk for the Power-Plant Superintendent

By M'Kean Maffitt

Superintendent, Water and Sewers, Wilmington, N. C.

IN the average boiler plant too little thought is given to obtainable efficiencies and necessary economies. No matter how small a plant may be, fuel economies are well worth striving for, not only from a dollars and cents point of view, but also for the sake of national conservancy. A dollar spent for apparatus or labor that will save a dollar's worth of coal, is a dollar well spent, because after it is spent we still have the coal, and if it is spent for apparatus, we have the apparatus too.

Let us take a shovelful of coal, say 20 pounds, and see what we should get, and what we do get, out of it.

Twenty pounds of good Pocahontas coal equals 270,000 heat units. One heat unit equals 778 foot-pounds of energy. Therefore one shovelful of coal equals 210,060,000 foot-pounds of energy, or 100,000 gallons of water pumped against a head of 250 feet. That is

absolute perfection. But as we cannot even approximate perfection, we lose in efficiency at every step. We lose when we burn the coal under the boiler, when the heat is absorbed into the boiler, when the steam passes to the steam end of the pump, when the steam end of the pump runs the water end of the pump, and when the water end of the pump pumps the water. In fact, we

lose everywhere, until, at Wilmington, we get for that 20 pounds of coal not 100,000 gallons of water but merely 4,000 gallons—merely 4 per cent of the power that was originally in that coal.

Not all these losses are in the furnace. We will treat only those that are in the furnace and that are preventable.

Mix Common Sense with Your Coal

If your town is 100 per cent metered, you have paid \$15 or more on each service so that you might have a meter there to see how much water that particular consumer gets. You pay an auditor to check up the cashier to see that he accounts for every cent that he receives and that he collects all that he should collect. Yet you pay a husky laborer to take a scoop—the bigger the better—and throw gold dollars, in the shape of coal, into the fire and burn them up, and never a check is there made to see whether he burns them correctly or incorrectly. Just so he keeps steam on the boilers so that the pumps will not stop is about all that you expect of him. No matter how he does it, steam must be kept up, and nothing much is said about it. If the steam goes down, then you go to the boiler room and bawl out the fireman and order him to throw more coal to the boilers. If you would get down to brass tacks and study your boiler room and your boiler furnaces and mix a little common sense with the coal, your steam pressure would go up and your coal bills would come down.

Air—How Much, When and Where?

Consider that one shovelful of coal as being pure carbon, and it will require 11.5 pounds of air per pound of carbon for perfect combustion into carbon dioxide. Thus, we have a call for 230 pounds, or 3,066 cubic feet, of air at atmospheric pressure and 70 degrees temperature. This amount of air must be equally and uniformly distributed over and through that coal when it is burning. If it were all applied at once, and could instantaneously unite with that coal, we should

have an explosion that would wreck the plant. It must be applied at the proper time, rate and place, or we shall get poor results. Most, if not all, should go through the fuel-bed. This depends on the thickness of fuel on the grates. If the fuel is too thin, it should all go through the bed. If the fuel is too thick, some of it should go in over the fuel-bed. But as this is

rather a ticklish proposition, it is better by far to have the fuel-bed the proper thickness so that all of it can go through the bed and do its proper work. However, if the fuel-bed is a little too thick, some of the air should be let in over the fire, but just enough to burn those gases that are distilled immediately after green coal is thrown onto the fire. As this is a very delicate adjustment, you should be very careful of it and have the best known methods of admitting this air over the fire, so that as soon as the excess gases are consumed, this over-fire air can be shut off and all the air passed through the fuel-bed.

The air that goes through the fuel-bed should be equally and evenly distributed throughout the whole mass of fuel. There should be no very bright places (blow-holes) nor any very dull spots (thick places). Where there are bright places, the fuel is too thin and too much air is getting in. This air simply tends to cool the fire. Where there are black or dark spots, not enough air is getting in and you are making carbon monoxide. When your fire is too thick, you make, and then throw away, the same kind of gas that your wife uses to cook with.

Your fireman knows that if he leaves the fire-doors open he will not get any steam, because his fire will be cooled down so fast that it will not be hot enough. But does he stop to think that several little bright spots may let in enough air to equal the amount let in through one fire-door? In either case he gets too much air and at the wrong place, and the coal pile suffers. He has to burn more coal to get the same amount of heat to the boiler. He also knows that if he shuts off the draft he cannot keep up the steam pressure, because his fire will not burn fast enough. If he has several dark spots in his furnace they may be shutting off as much draft as one fire-door will shut off. In either case the coal pile suffers, because then he is making carbon monoxide and not carbon dioxide.

Take each pound of that shovelful and burn it with the proper amount of air at the right time and place, and you get carbon dioxide as a result and 14,544 heat units that are ready and willing to go into the water that is in the boiler. Take the same pounds of coal and burn them with the doors shut tight, or with the fire choked down with too much coal, and out of each pound

of carbon you will get carbon monoxide and only 4,351 heat units—a loss of 10,193 heat units, or 70 per cent.

We cannot get perfection in our work, nor do we need to take the very least work offered, but there is a happy medium somewhere that all of us can reach, and all of us who go above that happy medium are working towards greater efficiency. This happy medium will approximate the combustion of carbon into carbon dioxide and will give us such results that we shall be greatly surprised.

The best obtainable results will be with a little too much air rather than with a little less than necessary. Just about 40 or 50 per cent too much air will give the best results obtainable in very good practise.

I can take the average boiler plant and let the regular fireman fire the boilers, take a little waste, putty and cement, a candle and then some good boiler wall covering, and in less than two hours I can have that boiler popping off so much that the fireman will think that his steam gage or pop-valve is out of order. Hold the candle flame near the walls and watch the draft draw it into the cracks. Ram the waste and putty or cement in the crack. Go over every square inch of the setting like that, and then plaster the whole thing over with a good boiler wall covering, and I venture to say that at the very least you will save 5 per cent of your fuel.

A Fuel-Bed of the Right Thickness

Suppose that your boiler walls are tight and you are still getting a low percentage of carbon dioxide. The chances are that your fire is so thin or irregular that about 200 per cent excess air is getting in through the fuel-bed. Fill up those holes or bright spots and level the bed down until it is about 4 inches thick, not including ashes and clinkers. Four inches of fuel, not over 5 at the most, is the proper thickness of fuel-bed. When you get the fire to this thickness, take another carbon dioxide sample and it will have gone to 10 per cent or over. Now you are getting somewhere. Your preventable fuel losses will be only about 6 or 8 per cent.

The best thickness of fuel-bed that I have ever found is between 4 and 5 inches, perfectly smooth and free from either bright or dark spots. With this thickness of fuel-bed, you should fire light and fire often. Scatter the coal well over the whole fuel-

bed, unless there be bright spots developing; these must be filled, and you will have a fire that cannot be beat.

If you will always get the same grade of fuel, determine the proper thickness of fuel-bed for that grade, keep the fuel-bed free of holes or thick places, keep the furnace walls tight, let in the air above the fire for only just a little time after firing, fire evenly and fire often, you can keep your carbon dioxide readings around 10 or 11 per cent, reduce your excess air to less than 100 per cent, and your preventable fuel losses to less than 8 per cent, and all the necessary equipment is an Orsat flue gas analyser at about \$40. If you will add to the Orsat a few draft gages, automatic draft and feed-water regulators, and a couple of good thermometers, you can still further reduce your losses and save coal.

Take the Orsat and get a few flue gas analyses. Take a sample and then look at the fire. Try another one and observe the difference in the fire and in the sample. If your percentage of carbon dioxide is low, see if the fire is not too thin or if it has any bright spots in it. Build up the fire a very little and fill up the holes with live coals or with fresh fuel and then take another sample of gas. Observe the difference. The fire will be brighter all over, and the percentage of carbon dioxide will immediately show an increase and the preventable fuel loss will show a decrease. Keep trying this arrangement until you get the right method when governed by the carbon dioxide readings. Do not make the readings for just one day and then sit down and wait results, but make them every day. Take the fireman with you. Show him what it means to the coal pile to have the fire just right. Let him see that you have a check on him and can tell just how he is taking care of his fire. In about three months the coal dealer will call up to ask when you put on central station power. He will think that you have stopped the use of coal, your fuel bills will be so little.

Raking and Shaking

Another bad leak of fuel is in the cleaning and raking of the fires; also in the shaking of the grates in the type of grate built for that purpose. About 4 per cent of the carbon of coal is wasted in the ash when cleaning fires. Take that shovelful of coal, 20 pounds, and throw 4 per cent, or about one

pound, of it in the ash pile. That is what you are doing every day in the average boiler plant. If your grate openings are too large, if your fireman too freely rakes the fire, if he overloads the fire-bed on shaking grates and then runs the fire down through the grates, if he takes a slash-bar and turns the ash up on top of the fuel-bed, he is wasting coal, both in the ash and in the way that he burns what is left in the furnace. Go home to your ash pile and take a few shovelfuls of ashes and clinkers and wash them down with water. Take each lump left and examine it closely. Put each clinker to one side and each piece of coke to the other side. Then sit there and look at what is being thrown away every time your fires are cleaned.

I know that it is some job to stand in front of a boiler and clean out the fire, because I have done it. Hang a couple of hooks in front of your boiler. Hang a piece of pipe, with a trace chain curtain on it, on these hooks in front of the furnace door. Insert the fire-cleaning tools through this chain curtain, and you can stand there and clean the fire better than you could otherwise and not get half of the heat in your face. The chain curtain holds the heat in the furnace, yet it allows sufficient visibility and freedom for the fireman to properly clean his fires.

Maybe you think that if your boiler-shell is right down in the fire you are getting good results. You are not. That boiler-shell acts like a dash of cold water on the fire. It cools the gases so quickly that they cannot burn.

If your steam pressure is 100 pounds gage, your temperature in the boiler is about 338 degrees. If you have done all the things that I have suggested, your furnace temperature is about 2,200 degrees. That boiler-shell is colder to that fire than the North Pole is to the Equator. The difference of 1,862 degrees, or 600 per cent, makes such a reduction in the flue gas temperature that it is simply impossible to burn the gas satisfactorily.

The ignition temperature of carbon is 766 degrees; carbon monoxide, 1,210 degrees; hydrogen, 1,130 degrees; hydrocarbons, 900 to 1,200 degrees; all are above the temperature of the boiler-shell. Now suppose that there is 25 per cent volatile matter, or gas, in your coal. This volatile matter is distilled off as soon as the coal is fired, and

you must have a furnace temperature sufficient to ignite it, and space enough in which to burn it; otherwise you lose it up the stack. If this volatile matter is hydrogen, or hydrocarbons, it has a very heavy heat value, especially the hydrogen (50,000 to 60,000 heat units per pound), and it must be burned above the fuel-bed. How can you retain it at a temperature of from 900 to 1,200 degrees when it is in contact with a boiler-shell that is only 338 degrees? It simply is not burned; it passes up the stack as smoke.

Did you ever notice a lump of coal spit

a stream of smoke until a flame was put near it, when it immediately ignited and then burned just like a regular gas jet? That is what it was, a gas jet. That same little stream of smoke, or gas, multiplied a million times, is that stream of smoke you see coming from so many stacks. If all the air leaks are stopped, the boiler-shell raised high enough above the fire, the fire carried at the right thickness and not fired too heavy, that smoke will stop and all that heat value will be added to the bank account.

ACKNOWLEDGMENT.—From a paper presented at the annual meeting of the North Carolina Section, American Water Works Association, November, 1922.

Operating Costs of City Departments

A REPORT of Financial Statistics of Cities for the year 1921 was issued by the Federal Bureau of the Census in December, 1922. Detailed data are given for 183 of the 253 places having a population of over 30,000. It is explained that omission of the financial statistics of 70 cities is due to the failure of the officials of those cities to cooperate with the Bureau of the Census by preparing the census schedules. The scope of the report is indicated by the following paragraphs:

The purpose of the Bureau in compiling this report is to provide information in regard to the financial administration of the cities, in such form as to be comparable, with the hope that it may be of assistance to the officials who are charged with responsibilities incident to the administration of local government and the betterment of the local communities; directly, through personal study of the reports, and indirectly, through the interpretations and recommendations of practical students of civic affairs and of local civic bodies.

The cities of this class are responsible for the protection of the lives, property, and health of their own inhabitants, constituting over one-third of the population of the Nation, and of many millions of persons who visit them, as well as for providing educational and recreational services, caring for the indigent, defective, and delinquent classes, and arranging for a constantly growing number of conveniences and

services which are demanded by associations interested in the betterment of the several urban communities.

The statistics of the 183 incorporated places represented in this report are presented in 16 general tables. Table 1 gives certain statistics relating to population and area; Table 2 gives the date of the close of the fiscal year of the divisions and funds of the governments of the municipalities, and the totals of their revenue and non-revenue receipts and governmental-cost and non-governmental-cost payments, together with their cash balances at the beginning and close of the year; Table 3 summarizes the revenue receipts and governmental-cost payments by divisions of the city government, and makes certain comparisons between those receipts and payments; Table 4 presents per capita averages, and Table 5 the per cent distribution of the receipts and payments shown in Table 3; Tables 6, 7 and 8 present detailed statistics relating to revenue receipts; Tables 9 to 12, inclusive, present detailed statistics of payments for governmental costs, together with certain per capita averages and data on per cent distribution of payments for expenses; Table 13 shows the non-revenue receipts and non-governmental-cost payments; Table 14 sets forth the value of certain assets; Table 15 relates to municipal indebtedness; and Table 16 presents statistics of the assessed valuation of property subject to taxation and the amounts and rates of tax levies.

From the information given in tables 9 and 10, THE AMERICAN CITY has compiled

ASSESSED VALUATIONS, PER CAPITA LEVIES, AND NET DEBTS

(186 cities are represented, 3 more than in the table on the next page)

| | Group I | Group II | Group III | Group IV | Group V |
|---|---------------|-------------|-------------|-------------|-------------|
| Assessed valuation per capita subject to general property tax for government of city..... | \$1,831.28 | \$1,430.54 | \$1,181.29 | \$1,053.73 | \$1,078.97 |
| Per capita levy of general property tax for all purposes | 37.85 | 39.54 | 36.28 | 32.95 | 32.59 |
| Per capita levy of general property tax for government of city..... | 36.20 | 34.33 | 27.14 | 24.81 | 24.62 |
| Net debt at close of year..... | 1,564,287,906 | 221,298,634 | 352,989,426 | 189,598,273 | 136,106,806 |
| Net debt per capita..... | 111.87 | 97.83 | 59.86 | 52.44 | 46.46 |

the following tabulation of the expenses of the general departments (other than for public service enterprises) of the 183 cities, total and per capita; also the per cent distribution of these expenses, showing the relative importance of the principal classes of expenses in five groups of cities:

- Group I—9 cities having a population of over 500,000
 Group II—6 cities having a population of 300,000 to 500,000

Group III—36 cities having a population of 100,000 to 300,000

Group IV—56 cities having a population of 50,000 to 100,000

Group V—76 cities having a population of 30,000 to 50,000

In the tabulation at the bottom of page 156 there are given certain figures from Table 15 of the Census Report on municipal debts and from Table 16 on assessed valuation and per capita levies.

GOVERNMENTAL-COST PAYMENTS FOR EXPENSES OF GENERAL DEPARTMENTS (OTHER THAN FOR PUBLIC SERVICE ENTERPRISES)

| | Group I | Group II | Group III | Group IV | Group V |
|--|---------------|--------------|---------------|--------------|--------------|
| <i>Total for all general departments....</i> | \$501,705,756 | \$69,269,299 | \$149,690,374 | \$84,678,584 | \$68,041,068 |
| Per capita | 35.88 | 30.62 | 25.38 | 22.25 | 23.23 |
| <i>General Government</i> | 56,959,304 | 7,006,154 | 9,661,693 | 5,533,321 | 4,763,686 |
| Per capita | 4.07 | 3.10 | 1.64 | 1.45 | 1.63 |
| Per cent of total..... | 11.4 | 10.1 | 6.5 | 6.5 | 7.0 |
| <i>Police Department</i> | 55,764,964 | 6,002,849 | 15,829,936 | 7,587,552 | 5,598,996 |
| Per capita | 3.99 | 2.69 | 2.68 | 1.99 | 1.91 |
| Per cent of total | 11.1 | 8.8 | 10.6 | 9.0 | 8.2 |
| <i>Fire Department</i> | 34,922,125 | 6,329,351 | 16,716,311 | 9,435,156 | 6,785,992 |
| Per capita | 2.50 | 2.80 | 2.83 | 2.48 | 2.32 |
| Per cent of total | 7.0 | 9.1 | 11.2 | 11.2 | 10.0 |
| <i>All other protection to persons and property</i> | 9,945,174 | 1,321,487 | 2,037,235 | 916,364 | 642,183 |
| Per capita | 0.71 | 0.58 | 0.35 | 0.24 | 0.22 |
| Per cent of total..... | 2.0 | 1.9 | 1.4 | 1.1 | 0.9 |
| <i>Conservation of Health.....</i> | 1,106,164 | 1,826,158 | 3,986,454 | 1,994,515 | 1,562,335 |
| Per capita | 0.79 | 0.81 | 0.68 | 0.52 | 0.53 |
| Per cent of total..... | 2.2 | 2.6 | 2.7 | 2.4 | 2.3 |
| <i>Sanitation, or Promotion of Cleanliness.</i> | 43,246,666 | 5,672,415 | 12,019,500 | 6,350,960 | 4,781,195 |
| Per capita | 3.09 | 2.51 | 2.04 | 1.67 | 1.63 |
| Per cent of total | 8.6 | 8.2 | 8.0 | 7.5 | 7.0 |
| <i>Highways—General Expenses</i> | 45,594,795 | 7,149,182 | 15,011,555 | 7,897,759 | 7,869,825 |
| Per capita | 3.26 | 3.16 | 2.55 | 2.08 | 2.69 |
| Per cent of total..... | 9.1 | 10.3 | 10.0 | 9.3 | 11.6 |
| <i>Highways—Repair and Construction for compensation</i> | 821,142 | 390,802 | 1,088,197 | 475,902 | 285,734 |
| Per capita | 0.66 | 0.17 | 0.18 | 0.13 | 0.10 |
| Per cent of total..... | 0.2 | 0.6 | 0.7 | 0.6 | 0.4 |
| <i>Charities, Hospitals and Corrections...</i> | 43,076,002 | 5,437,574 | 6,369,011 | 3,012,359 | 2,153,032 |
| Per capita | 3.08 | 2.40 | 1.08 | 0.79 | 0.73 |
| Per cent of total | 8.6 | 7.8 | 4.3 | 3.6 | 3.2 |
| <i>Schools</i> | 152,182,576 | 22,677,900 | 55,991,681 | 36,163,688 | 28,913,294 |
| Per capita | 10.88 | 10.03 | 9.50 | 9.50 | 9.87 |
| Per cent of total | 30.3 | 32.7 | 37.4 | 42.7 | 42.5 |
| <i>Libraries</i> | 5,375,393 | 994,054 | 2,076,708 | 1,121,277 | 973,924 |
| Per capita | 0.38 | 0.44 | 0.35 | 0.29 | 0.33 |
| Per cent of total | 1.1 | 1.4 | 1.4 | 1.3 | 1.4 |
| <i>Recreation</i> | 16,946,174 | 2,268,946 | 5,108,923 | 2,442,211 | 1,901,274 |
| Per capita | 1.21 | 1.00 | 0.87 | 0.64 | 0.65 |
| Per cent of totals..... | 3.4 | 3.3 | 3.4 | 2.9 | 2.8 |
| <i>Miscellaneous</i> | 25,765,337 | 2,102,427 | 3,793,170 | 1,747,570 | 1,809,508 |
| Per capita | 1.84 | 0.93 | 0.64 | 0.46 | 0.62 |
| Per cent of total..... | 5.1 | 3.0 | 2.5 | 2.1 | 2.7 |

Municipal Employee Problems to Be Studied

TO study and formulate the best methods of selection, transfer and promotion of public service employees is the primary function of the newly organized Bureau of Personnel Administration at Washington, D. C. Professor L. L. Thurstone, Head of the Department of Education and Psychology at Carnegie Institute of Technology, Pittsburgh, is Director of Research in charge of the Bureau. The

Bureau is to be affiliated with the Institute of Government Research and has been privately endowed subsequent to appeals for its establishment from the United States Civil Service Commission. An advisory board of five members of the national civil service commissions will supervise its operation. Its field of work covers investigations of state and municipal employee problems in addition to those of the federal service.

Resurfacing Methods in American Cities

Ways of Extending the Life of Stone, Brick, Asphalt and Concrete Roads

IN his annual address, Hon. Robert McNutt, Mayor of Muscatine, Iowa, and President of the League of Iowa Municipalities, summarizes in an interesting manner the methods used in resurfacing old paving in a number of American cities.

Lakewood, Ohio, levels off the old base with a binder course and surfaces with sheet asphalt or asphaltic concrete.

In Middletown, Ohio, the old brick is first cleaned and then covered with a 1½-inch layer of crushed stone, 1½-inch size. Tarvia X is then applied, about one gallon per square yard, followed by stone chips about ¾-inch deep. The pavement is then rolled with a steam roller. The binder is then applied at the rate of about ½-gallon per square yard and covered with about ¼-inch of torpedo sand. There is another application of ½-gallon per square yard of the binder and the pavement is rolled. After the street has been subjected to travel for three or four months, the surface is cleaned and ½-gallon per square yard of Tarvia B is applied, and the surface covered with torpedo sand and rolled.

Sandusky, Ohio, covers old brick pavement with 1¾ inches of sheet asphalt on a 1-inch binder after filling depressions in the old brick pavement with additional binder, and tamping it.

South Point, Ohio, either turns over the brick or covers the pavement with sheet asphalt.

Toledo, Ohio, does not believe in resurfacing over old brick pavements where the

brick were not laid on a concrete base.

Wellington, Ohio, covers the pavement with sheet asphalt.

In Beaver Falls, Pa., old brick pavements are thoroughly cleaned and enough binder applied to restore the crown; then they are covered with 2 inches of asphaltic concrete.

In Du Bois, Pa., in 1909, 17,000 yards of brick were resurfaced with 2½ inches of asphaltic concrete.

In Franklin, Pa., sheet asphalt with a binder course was used on old brick pavement.

Greenville, Pa., contemplated resurfacing 25,000 square yards with sheet asphalt or Warrenite.

Oil City, Pa., cleans the pavement and fills depressions more than 1 inch deep with binder and then lays binder with 1-inch minimum depth and a 1½-inch top of standard sheet asphalt.

Sewickley, Pa., uses a 2-inch thickness of bituminous concrete.

In Oshkosh, Wis., brick pavement is generally resurfaced by turning the brick, replacing broken bricks with whole ones. About 6,000 square yards were covered last year with a mat of tar, roofing gravel and sand ½-inch thick.

In Milwaukee, Wis., old brick pavements are resurfaced by removing the brick and substituting a 3-inch asphalt pavement. In a very few cases, the bricks have been turned, but this has not proved very satisfactory.

New Method of Paving Bridge Floors

IN order that the probability of fire on the Victoria Bridge, Montreal, Quebec, might be reduced to a minimum, it was decided in reconstructing the floor to surface it with two inches of sheet asphalt. In addition to the reduction of fire hazard, there has been a reduction of maintenance cost as compared with that of the old wooden floor. This novel method of treating a bridge floor is proving quite popular in Canada.

To provide for the effect of vibration of the bridge and also for the effect of heavy traffic

and weather, an unusually dense mixture of asphalt was adopted, care being taken to lay it with sufficient resiliency to meet the traffic conditions. Consequently a high percentage of bitumen for plasticity and a maximum amount of filler for stability were specified. After a good deal of experiment, it was found that 13 per cent of asphaltic cement was excessive, and finally 11.6 per cent was adopted. The new bridge floor has now been giving excellent service for two years without additional cost for maintenance.

Jumping Jack--the Fire Prevention Clown

How Kansas Cities Are Decreasing Fire Alarms from 15 to 35 Per Cent

THE educational antics of Chow-Chow and Chew-Chew, the health clowns, are well known from coast to coast. They have visited hundreds of schools, expositions and county fairs and have spread the doctrine of clean teeth, proper food and plenty of sleep for children. It has remained for Harry K. Rogers, Assistant Fire Chief, Wichita, Kan., to carry this novel idea into the fire prevention and safety-first field. Under the name of "Jumping Jack, the Fire Prevention Clown," Mr. Rogers appears on the school platform or at a county fair in his striking suit of red and yellow and wearing a fireman's red helmet. He talks to the children in a simple and effective manner about fire dangers and fire protection. The children are startled to hear that a fire occurs every minute of the day in the United States. The frequency of the fires is demonstrated by a fire gong that rings each time the big clock, the special property of the clown, ticks off a minute. Greater is their astonishment when they learn that seven out of ten fires are caused by the carelessness of some one in the home or place of business.

Jumping Jack also instructs the children how to turn in a fire alarm correctly, and the dangers of spontaneous combustion from floor mops, oily rags and old clothes if kept in the house in a closet, are explained in simple language.

The following paragraphs are abstracted from a recent talk which Jumping Jack gave before the school children in Salina, Kan. He made his appearance in clown attire, hopping before the children on a pogo stick and waving his hand vigorously:

"Listen to me, I am going to tell you something. The first thing I want to tell you is how many fires we have. Did you know that there is a fire every minute in the United States? Watch this big fire clock over here. [Walks over to large wooden fire clock, so constructed that the fire bell rings every time the big hands pass the minute mark.] Every time this clock rings, or every time this hand moves one space I want you to count. You can all tell time, can't you? All right. Now the first time I want you to say 'One,' the next

time 'One-two,' and the next time 'One-two-three,' and so on, like that. [Jumping Jack starts the clock hands, and the children count.] Oh, you are not doing it as I told you to. I want you to say 'One' the first time it rings, and the next time 'One-two.' Now let's practise it together, and be sure to listen for the fire bell. [Children start counting.] Oh, louder! Oh, louder than that! [Children scream out the numbers.] Fine! I heard you that time. All right. Now let's try it again. [Children count five.] Say, I think some boy down there had better study his arithmetic. [Boy counted six instead of five for the five minutes on the fire clock.] All right. There are five fires in five minutes. Now, how many did I say? Five fires in five minutes. [Children answer.] Now tell me how many fires there are in ten minutes. [Children answer.] Fine! Ten fires in ten minutes. Listen. Do you know that seven out of every ten fires are caused by somebody's carelessness? Just think of it, seven out of ten fires are caused by carelessness. Now, how



HARRY K. ROGERS—JUMPING JACK, THE FIRE PREVENTION CLOWN

many did I say? [Children answer.] Fine! Seven out of ten fires caused by carelessness. Now don't forget that. Listen, you girls. How many fires out of ten are caused by carelessness? [Girls answer.] All right. Now let's count that. [Girls count.] Now you boys. How many fires out of ten are caused by carelessness? [Boys answer.] Come on, boys, let's count that again and drown out the girls. [Boys count.] Now, don't you children forget that, because I am going to ask you again in a few minutes. I am going to ask—[Climbs on ladder, tries to find steps with his foot and misses; tries again and again. Children scream with laughter. Gets foot twisted between rounds on ladder before finally getting it on the step. Children laugh again.]

"There is something else that I want to tell you. If any of you should ever get on fire, I want to tell you what to do. The first thing—don't ever, ever run, because if you run you may burn to death. If you are in the house, just lie down on the floor and roll up in a rug, and it will smother the fire. And if you should happen to be outdoors, just lie down on the ground and roll over and over, but don't run, and the whole time you are doing this, I want you to yell bloody murder. Will you do that? [Children answer.] Maybe you have a little brother or sister at home that might catch on fire, and they are not old enough to know what to do. Let me tell you something. If you are there, you just run to the flour bin. You all have a flour bin at home, haven't you? [Children answer.] Well, you just run to the flour bin and get a pan full of flour and throw it on the fire and it will put it out lots quicker than water. Don't ever use water. Now remember that.

"How many of you have a mop like this at home? [Holds up oily mop. Children raise hands.] Well, when Mother gets the dishes washed and the floors swept, she always takes the mop and goes like this, doesn't she? [Gets mop stick caught between feet and pretends to be unable to get it straightened out; falls on floor. Children laugh.] And she mops all around and when she gets through mopping she takes it in the parlor and stands it against the piano because that is where she keeps the mop. [Children all say "No."] Oh, of course not. Mother doesn't keep the mop in the parlor, because you might have company and she would not want an old oily mop in the parlor. I know what she does with it. She puts it in the kitchen behind the door, or in the pantry or under the stairway in the closet. Maybe in this same closet on the shelf there are some nice soft cloths that she uses to wipe the furniture with. You know those rags that Mother keeps. They are hard to get and she doesn't want to throw them away, so she puts them on the shelf and maybe these rags and this oily mop cause a fire. This kind of fire is called a spontaneous combustion. Now all of you don't know what kind of a fire that is. It is a fire that starts all by itself without anyone to light a match to start it. Will you remember

that and when you go home— [Causes explosion under toy stairway on which he is sitting, runs over to toy phone and calls fire department, jumping up and down excitedly, and does not give them street address of fire. Children laugh and scream.] Listen, children. Now what did I do that was wrong? In the first place, I put the mop under the stairs in the closet. Now when you go home I want you all to look around the house and find out where Mother keeps the mop, and you tell Mother to put it in a tin bucket on the back porch, and if she doesn't, you arrest her. Will you? [Children answer.] But you tell her to never, never keep it in the house. Now I did something else that was wrong. I ran over to the phone and called Central and said 'Hurry up, quick. My house is on fire and I live across the street from the church,' and when Chief Wolbert got the report he thought I lived across the street from this other church up here and when he went up there it wasn't where I lived at all, and by the time he got to my house it was burned down. Now you all know how to use the telephone, don't you? [Children answer.] Now when you go to the phone you tell Central that you want 3X, because that is the number here in Salina, and there is always a man at the Fire Department to answer the phone, night and day. Now will you remember that? Don't forget."

The comments of various fire department officials who have heard and witnessed Jumping Jack's talk and antics are most favorable. Chief Joseph Hanlon of the Topeka Department remarked, "It is seldom a speaker can hold the attention of young children, especially on a fire prevention topic, but this was something out of the ordinary, and I honestly believe that it will accomplish more along the lines of fire prevention than all fire prevention speakers."

The fire prevention program is sponsored by the Kansas State Firemen's Association and the Kansas State Fire Chiefs' Association. The program is essentially for children from the first to the sixth grades, inclusive, and to get the best results, it is necessary to have them brought by their teachers to some centrally located theater or school auditorium. While a stage is not essential, it is better to have one, as several large crates of property are carried by the clown. From a conservation and prevention standpoint there is little doubt that one of these talks is an excellent investment for any city and that it will save a community many dollars, to say nothing of the possibility of saving the lives of some children.

Dangers to the Sanitary Quality of Public Water-Supplies

By E. Sherman Chase

Sanitary Engineer, Metcalf & Eddy, Boston, Mass.

THE major dangers to the sanitary quality of public water-supplies are, in general, well known to engineers, sanitarians and water-works officials and the necessity for adequate protection against such dangers is thoroughly appreciated. On the other hand, many of the minor dangers are less well recognized, and the extent to which precautionary measures should be taken to guard against some of these is still a matter regarding which opinion is not unanimous. The following discussion has been prepared with a view

to stressing the lesser sanitary hazards, illustrating these hazards in most cases with accounts of outbreaks of water-borne disease for which they have been responsible.

For convenience and clearness, the hazards will be discussed under three classes, namely, hazards to surface supplies, to ground water-supplies, and to supplies in distribution systems.

The direct discharge of sewage into bodies of water from which public water-supplies are taken is, of course, the best-recognized danger. Of late years, the almost universal adoption of purification of supplies taken from sources receiving direct and continuous sewage pollution has resulted in a marked reduction in the typhoid fever death rate in those municipalities having such supplies. The effect of the purification of badly polluted supplies at Lawrence, Cincinnati, Philadelphia, Pittsburgh and many other cities is well known. This direct discharge of sewage into sources of water-supply constitutes the greatest danger to public water-supplies, but this fact is so



A FARM DRAINING TO A WATER-SUPPLY STREAM IN NEW YORK STATE

A case of typhoid had occurred in this farmhouse

well known that there is no need of dwelling upon it at greater length.

Indirect Pollution.—The danger from the indirect and less obvious sources of pollution, although relatively less serious than from direct contamination, is nevertheless very real, and examples of outbreaks of typhoid and other intestinal disorders due to indirect pollution are not lacking.

Very few watersheds are entirely free from human habitations. Wherever there are habitations there is also the possibility of typhoid or dysentery and the accompanying danger that the germs of these diseases may reach the watercourses draining the areas upon which the habitations are located. The disastrous epidemic at Plymouth, Pa., is well known.

Manured Fields.—A rather startling demonstration of pollution by drainage from manured fields occurred in the village of Cazenovia, N. Y., in the early part of 1918. The water-supply of this village was at that time derived from a small upland reservoir, springs, wells, and at times from Cazenovia

Lake. None of the various sources could be considered above suspicion. During the winter of 1917-1918 the field adjacent to the reservoir was heavily fertilized with barnyard manure. Shortly afterwards there occurred a very sudden and heavy thaw which carried such quantities of manure and seepage from the manure into the reservoir that water in the village was dark mahogany in color and actually frothed when drawn from faucets in the houses. Fortunately, no known ill effects followed this occurrence, evidently because the decidedly objectionable character of the water prevented people from using it for drinking.

Boating, Bathing and Fishing.—The potential danger of contamination as the result of boating, bathing and fishing upon bodies of water serving as water-supplies is, of course, well recognized, although actual examples of epidemics resulting from infection as the consequence of such practices are difficult to cite. This is to be expected owing to the usually transitory nature of such contamination.

Ice Cutting.—The danger of contamination by men engaged in ice cutting upon water-supply reservoirs and ponds is also a hazard, the ill effect of which it is difficult to prove by actual examples. In 1917 there occurred an outbreak of typhoid fever in the city of Hillsdale, Mich., which was attributed to an infection of the city water-supply by a crew of men engaged in ice cutting upon the lake from which the supply was obtained.

In addition to the danger of contamination by men harvesting ice, there is also the danger from men removing ice from ice houses in the summer. Ice cutting itself is frequently carried on under sanitary inspection, but the removal of the ice is usually under no such supervision, and the danger may therefore be greater.

Lumbering.—Lumbering operations upon timbered watersheds are another hazard of relatively frequent occurrence, but one to which infection of water-supply has seldom been traced.

Labor Camps.—Labor camps, unless most careful sanitary oversight is maintained, also constitute a menace to water-supplies when located on watersheds. Two serious outbreaks of typhoid occurred some years ago in New York State which may have been due to infection by laborers in camps upon watersheds.

Highways and Railroads.—The infection of water-supplies by travelers upon highways and upon railroads is also a danger, of which definite examples are impossible to prove. You will recall the severe outbreak of typhoid in Scranton, Pa., in 1906, at which time considerable emphasis was laid upon the probability of infection of one of the reservoirs by excreta discharged from passenger trains which paralleled the reservoir and tributary watercourse for some distance.

Cross-Cuts in Reservoirs.—A condition with respect to pollution and possible infection, in the case of the smaller lakes and large reservoirs, consists of nullification of the beneficial effects of storage by the rapid transportation of polluting material from relatively remote points to the immediate vicinity of intakes by currents set up by various causes.

Carriers on Watersheds.—Although interconnected with other hazards, the possible existence of typhoid carriers upon watersheds is a factor worth considering. Examples of outbreaks of typhoid definitely traced to carriers upon watersheds are lacking so far as I have been able to learn.

Accidents to Purification Plants.—The installation of water purification works does not constitute an absolute safeguard against possible infection unless continuity of efficient operation is maintained. Accidents of one kind or another occasionally occur which result in the delivery of unpurified water to the consumers. One of the most striking accidents to a filter plant occurred to the Albany plant in 1913, when as the result of the highest recorded flood in the Hudson the filtration plant was inundated for a period of somewhat over a day and raw Hudson River water was pumped into the mains.

The filter plant was flooded early in the morning of March 28 and was out of service until about noon on March 29, or about 30 hours. When it was apparent that the filter was to be flooded, warnings against the use of unboiled water were issued through the press, but such warnings are futile and were evidently pretty generally disregarded. At the end of about two weeks, cases of typhoid began to be reported, and in all there occurred between 170 and 200 cases.

Accidents to Intakes.—In cases where

water-supplies are taken from large rivers or lakes receiving sewage pollution, but where the pollution extends in comparatively restricted threads of the stream or in limited portions of the lake, there occurs the hazard resulting from leaky intake pipes, should such intake pipes pass through the polluted portion of the body of water forming the source of supply.

Improper Operation of Purification Plants.—An example of the result of a failure to properly operate a filter plant is the case of an outbreak of 13 cases of typhoid fever in the village of Massena Springs, N. Y., in the early part of 1917. The water-supply of this village is derived from a power canal fed by the St. Lawrence River. The supply is contaminated as a result of the general pollution of the St. Lawrence River, and at times from dredging operations above the intake. The supply is chlorinated and filtered through pressure filters. Just prior to the outbreak referred to, the filters had been out of service for about two months, and during the same period the chlorination plant was also out of commission.

Exhaustion of Water Purification Chemicals.—A danger which must always be borne in mind in connection with water purification plants using any chemical, is the possibility of supplies of the chemicals becoming exhausted before new supplies are available. This condition was acute during the war, when freight movements and deliveries were very uncertain. Furthermore, this condition is liable to be met with at any time of freight embargoes.

Poor Quality of Chemicals.—A somewhat similar hazard to that referred to above is that of using chemicals deficient in strength. This is more liable to occur with hypo-

chlorite of lime than with other chemicals used in water purification, because of its tendency to deteriorate on standing.

Filter Plant By-Passes.—Frequently by-passes are provided which permit the discharge of untreated water directly into the mains. For example, Geneva, N. Y., obtains its water-supply from Seneca Lake, about $2\frac{1}{2}$ miles south of the point where the sewage of the city is discharged. Ordinarily the sewage flows out of the lake away from the intake, but under certain conditions of wind and lake currents it undoubtedly reaches the vicinity of the water-works intake. Purification by means of a slow sand filter plant has been provided, but during the latter part of 1917 it became necessary to by-pass a small amount of raw water around the filters on account of the inability of the filters to handle the entire water consumption of the city. Furthermore, when one of the filter units was out of service for cleaning, the amount of water by-passed became relatively large for several hours. This by-passing of raw water resulted in some 15 cases of typhoid in the city, which had become practically free from the disease after the installation of the filter plant.

(To be concluded in the March issue of THE AMERICAN CITY)

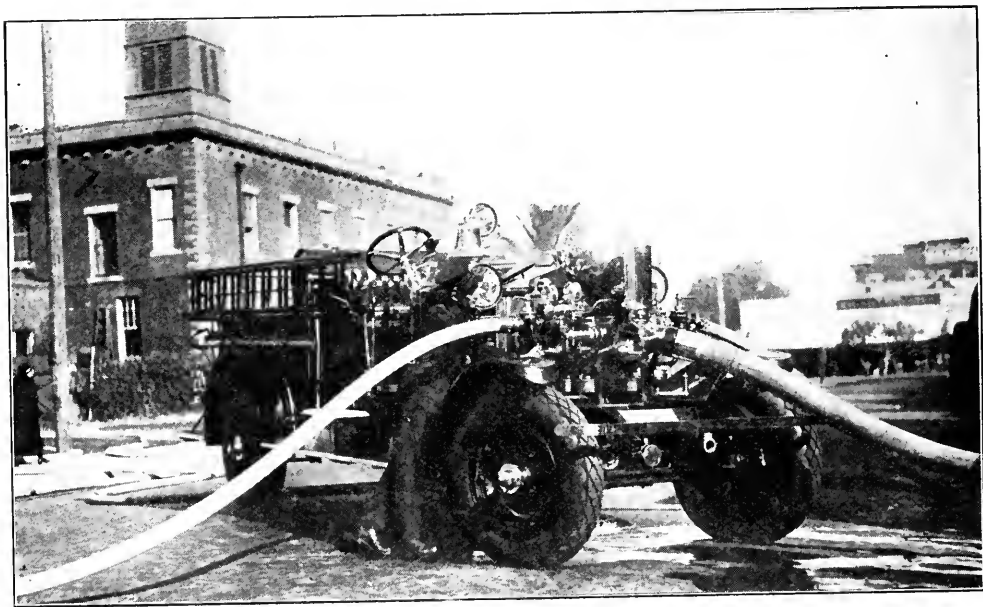


AN ICE HOUSE ON A MASSACHUSETTS POND WHICH WAS USED UNPURIFIED AS A WATER-SUPPLY

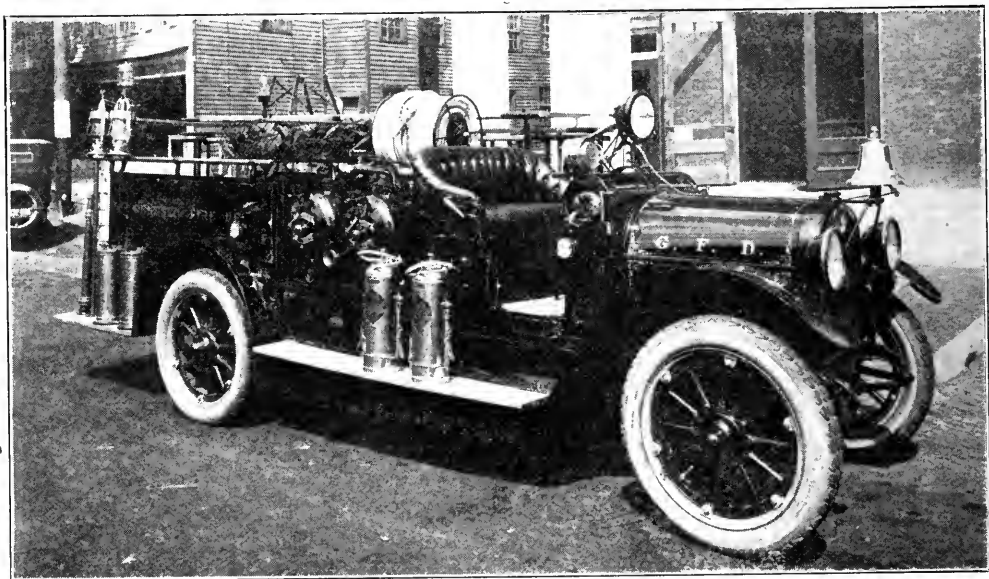
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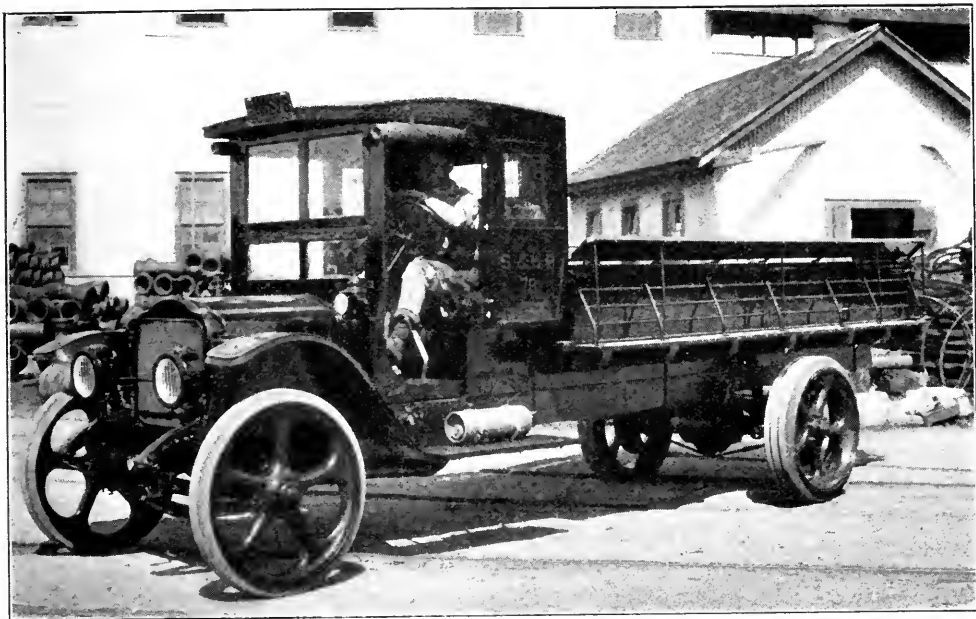
Municipal Motor Apparatus Saves City's Time and Taxpayers' Money Throughout the Year



THE NEW AHRENS-FOX FIRE ENGINE IN SERVICE AT LONG BEACH, CALIF.
 Photograph furnished through the courtesy of G. C. Craw, Fire Chief, Long Beach, Calif.



A PROSPECT DELUGE CHEMICAL AND HOSE TRUCK USED BY THE VILLAGE OF
 GENESEO, N. Y.



A 2-TON WHITE TRUCK USED IN GENERAL HAULING SERVICE BY THE SEWERAGE AND WATER BOARD, NEW ORLEANS, LA.

This truck has a 168-inch wheel-base, which is something new for 2-ton trucks. Photograph furnished through courtesy of the New Orleans Sewerage and Water Board



HANDLING THE 10-INCH SNOW OF DECEMBER 14 IN DETROIT

The Universal crane shown removing the snow from the sides of the street was four miles outside the city when called for service and was in operation in Cadillac Square one hour and a quarter after starting from its parking place. It loaded one 5-ton truck with side-boards every 2 minutes through a 24-hour period. Three hundred trucks were loaded between noon and midnight. The handling of 1,500 to 2,000 yards of snow in 12 hours by this crane and Owen snow bucket was done so efficiently that the bucket did not mar the pavement in any way

Chamber of ***** Commerce Activities in Public Affairs

Elementary School Conditions in the United States

WASHINGTON, D. C.—The Civic Development Department of the Chamber of Commerce of the United States has issued a preliminary report on surveys of school buildings and equipment and health and physical education in the elementary schools. The surveys of school conditions were made by 185 chambers of commerce in various parts of the United States.

The report contains many valuable suggestions as to present conditions and the proper development of school facilities. It shows that among the elements being developed in the communities which have the most modern school systems are:

1. Properly planned buildings rightly located and surrounded by adequate open spaces
2. Efficient health organization, including school physicians, dentists and nurses
3. Thorough medical examination of all children before admission to school
4. Provisions for nourishment not only for malnourished but for all elementary school children
5. Outdoor classes and schools
6. Health instruction and supervised play

It may be secured by addressing the Civic Development Department, Chamber of Commerce of the United States, Washington, D. C.

JOHN IHLDER.

To Stimulate State-wide Interest in City Planning

MASON CITY, IOWA—With exceptional cooperation from Iowa State College, a comprehensive and practical plan for Mason City is in process of preparation by the City Planning Subdivision of the Chamber of Commerce. Rolland S. Wallis,

Municipal Engineer of the Engineering Extension Department of the College, has offered his own services and those of the Engineering Department, without compensation, to prepare the city plan of Mason City.

That the study will be a thorough one and the plan a real community enterprise is indicated by the fact that the following survey and planning committees have been appointed:

Zoning
Transportation
Parks and Playgrounds
Housing
Street Traffic
Street System
Street Details
Publicity
Law and Finance

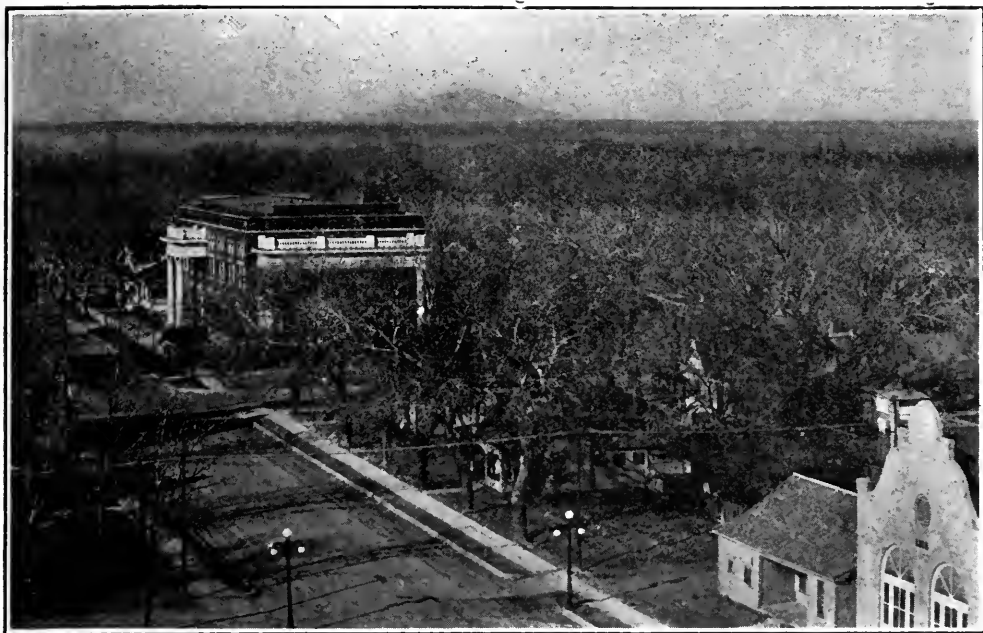
Public Buildings
Sanitation and Public Health
Industries
Real Estate
Public Utilities
Civic Art
Nuisances

When the plan is completed it will be published as an official bulletin of Iowa State College. This is all being done for the purpose of stimulating interest in city planning in the state of Iowa. Mason City is taken as an example of the typical Iowa community. This service was offered after a request for help from the Chamber of Commerce and because of the great interest which has been evidenced on the part of Mason City in this subject.

H. M. VAN AUKEN,
Secretary, Mason City Chamber of Commerce.

A City's Pride in Its Shade Trees

ROSWELL, N. MEX.—Shade trees in a city surrounded by the open plains country of the Southwest have an appeal much stronger than in cities where the tree problem has been one of elimination rather than of production. Roswell has taken pride in its shade trees since the city was founded, in the eighties; in fact, the trees preceded the establishment of the city. A few cottonwood limbs were stuck in the ground along a ditch which carried water most of the year. They grew, and naturally the first little group of houses was built near these trees. Captain J. C. Lea, the pioneer of Roswell, deserves much of the credit for



A GLIMPSE OF ROSWELL'S FOREST

Even without foliage the branches of these city trees are thick enough to hide 325 homes, besides 3 churches and a school

additional planting. In the nineties he put out a hundred cottonwoods along the few streets which were then established. When Roswell began to see visions of becoming a city, these trees were of sufficient size to have their worth appreciated and the planting continued.

An abundant supply of artesian water has made the general growing of shade trees practical. The city government early saw the need of city supervision in the planting and protection of the trees. An ordinance was adopted giving the city entire possession of all trees outside the property line. A property owner cannot even cut off a limb without obtaining permission from the city authorities. Though the city owns the trees, the property owner plants them, waters them and pays for pruning. If trees were not prized so highly, this system, of course, would not work, but the city government meets practically no opposition from property owners.

The Chamber of Commerce about every second year promotes a tree-planting campaign, which increases the number of trees by 200 to 500. These plantings are encouraged in sections where new residence districts are starting and in the older sections

where the cottonwoods are approaching maturity. Recent plantings are mostly elms.

A recent incident shows something of the regard in which Roswell's shade trees are held. A new paving program covered streets where the trees were too far from the property line to come within the parking. The city ordered the trees cut down, and even though one of them was in the middle of a cross-street, dozens of property owners all over the city protested vigorously and advocated the laying of paving around the trees. In every case the city saw that new trees were planted to take the place of those removed.

The addition of seventy blocks now being made to the paved district of the city is resulting in an even larger planting of trees than in any of the last ten years. When side parkings are definitely established as a result of the paving, property owners immediately start grass and plant more trees. The new trees are planted in the proper location with respect to the boundaries of the parking. When these are large enough, the older trees, if not properly placed, will be removed.

CLAUDE SIMPSON,
Secretary, Chamber of Commerce.



Why Okmulgee Standardized on "Caterpillars"

The "Caterpillar's"* field of usefulness is by no means limited to road making. There is a "Caterpillar"* of size and capacity for every power need. On farm or ranch, in the mining, oil and lumber industries, for snow removal and other civic work—wherever power and endurance are at a premium, the "Caterpillar"* has no real competitor.

Okmulgee County, Oklahoma, lies in the center of a vast field, where pipe casings and boilers, weighing many tons, are continually hauled over the roads. This heavy freighting, which does not stop even in muddy weather, is a severe test of roads. After experimenting with other kinds of road building machinery, Okmulgee County Commissioners purchased a 10-ton "Caterpillar."* Its performance resulted in repeat orders until Okmulgee now operates a fleet of nine "Caterpillars."* The Commissioners write: "Since buying the "Caterpillars"* we have graded and maintained hundreds of miles of roads in this county and the work has been done at approximately one-half the cost we have been able to do it with any other equipment." The "Caterpillar" method of handling public works of every kind is of interest to every county, township and city official. Our booklet "The Nation's Road-Maker" will be sent on request.

* There is but one "Caterpillar"—Holt builds it. The name was originated by this Company, and is our exclusive trademark registered in the U. S. Patent Office and in practically every country of the world.

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A Three-Year Campaign Against the Mosquito

NEWPORT, R. I.—For the purpose of controlling mosquito breeding, the Newport Chamber of Commerce has initiated a three-year program to clean up and drain all swamp areas adjoining the city. An oiling squad will be maintained under a competent director from May 15 to September 15, and a ditching gang will furnish permanent relief by draining all areas possible in the time specified.

This work is supervised by a committee from the Chamber working under the direction of an expert who has had years of experience in the business. During 1922 we expended \$4,500 on this work, \$3,000 of which was contributed by our summer residents and \$1,500 by the state of Rhode Island. Two plots of land, of 50 and 80 acres respectively, have already been reclaimed for cultivation.

The plan includes educational work among the school children, services of the Boy Scouts and Girl Scouts, and cooperation with the City Health Board.

W. C. CAMPBELL,

Secretary, Newport Chamber of Commerce.

Financing Escanaba's White Way

ESCANABA, MICH.—The first forum dinner of the Escanaba Chamber of Commerce, held October 19, marked the successful culmination of a campaign to raise \$12,000 toward financing one of the biggest and best-lighted White Ways in all the North Central States. The White Way Technical Committee of the Escanaba Chamber, appointed July 6, recommended in its final report to the Board of Directors at the first regular meeting in September a lighting system on 1 1/6 miles of our municipal business street, costing \$18,000. Of this sum the traction company agreed to furnish \$3,000 and the lighting utilities \$3,000, leaving \$12,000 to be raised by subscription from property owners and business men.

The plan recommended by the White Way Technical Committee provided a lighting system which has been assured without profit to jobber or retailer, without expense for engineering service, and with a saving of from \$10,000 to \$15,000.

The campaign to raise the funds was thoroughly organized, and resulted, in spite of the financial depression, in an over-subscription approximating 10 per cent. After

all collections are made and bills are paid, it is proposed to make a prorata refund to each contributor.

Members of the Chamber of Commerce are elated over the success of the campaign and are coming to feel that there is nothing beyond their reach if they really set out in an organized way to accomplish it.

ORREN I. BANDEEN,

Secretary, Escanaba Chamber of Commerce.

Troy's Industrial and Mercantile Exposition

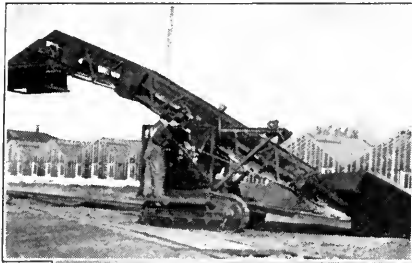
TROY, N. Y.—At a Members' Smoker held on the evening of December 12, the final report of the Chamber's Exposition Committee was made, showing a total attendance of over 50,000 and a net profit of \$8,098.52.

When the Industrial and Mercantile Exposition was conceived and organized by the Troy Chamber, there was no idea of making it a revenue-producing project. The one thought was to conduct the best exposition that could be brought together and to make sure that all expenses would be paid. The result has surprised even the most sanguine members of the committee, and the psychological effect upon the community is very great. The surplus funds may be used as the nucleus for a Chamber of Commerce building in Troy or for some project of a permanent and community-wide nature.

The exposition was staged in Troy's new armory, which was admirably suited for the purpose. On one night there was an attendance of over 7,000. During the exposition 10,000 school children were admitted free of charge.

More than a hundred exhibitors, representing the manufacturing, jobbing and retail interests of Troy and vicinity, took space in the armory. The general excellence of the displays was a matter of wide-spread comment and approval. The building line was defined and also the sky-line, so that the ensemble was symmetrical and exceedingly attractive. Every inch of space was sold two months ahead of opening day.

The affair was from first to last a Chamber of Commerce effort. President William C. Feathers appointed a special committee to have entire charge of the project. The committee was fortunate in being able to engage as general manager, James D. Fleming, a man of wide experience as a commercial traveler and business executive.



Moving a Barber-Greene Snow Loader, under its own power, for shipment as snow insurance for a mid-western city.



Typical Reports From Eastern Cities

During the last six weeks a dozen cities have added Barber-Greene Snow Loaders to their snow-fighting equipment.

All those in the east, and some in the west, have had ample opportunity to demonstrate the value of the Barber-Greene in saving time and money.

Albany says: "On account of the labor shortage we could not have got anything done at all, and the loader 'saved our lives'."

And: "It is over thirty times as fast as hand labor."

And: "With it we hung up a record of loading 45 trucks per hour."

Boston "L" officials say: "It replaces 150 to 200 men."

And: "We would not take \$50,000 for the Barber-Greene Loader if it could not be replaced."

The Barber-Greene is the first practical Snow Loader.

The most efficient method of using it is to plow the snow into windrows at the curb, loading from these with the Barber-Greene.

Its success is due to its design and to the fact that it is the product of a company that has for years specialized in material handling equipment, and has spent three years in perfecting the present model.

The new Model F, not only handles snow, but by means of a bucket boom can be converted into a bucket loader in summer time for loading sand, gravel, and the like.

Details about its work, performance, and construction will be freely furnished on request.

Barber-Greene Company

Aurora, Illinois

Branch Offices in
33 Cities



BARBER-GREENE SNOW LOADERS

He had had a part in former expositions held in Troy and was thoroughly acquainted with the personnel of Troy's manufacturing establishments.

The exposition was advertised by posters and cards as far north as the Canadian line, west to Utica, south to Hudson, and east to Pittsfield, Mass. Thus the city of Troy and its products were brought before the eyes of thousands of people living in this large territory.

G. W. LEMON,
Managing Secretary, Troy Chamber of Commerce.

Chamber Aids Social Service Federation

SOUTH BEND, IND.—The South Bend Federation for Social Service, which operates from the Chamber of Commerce Building, in which place it has its permanent headquarters with a paid executive in charge, asked for \$115,000 for its coming year's work, and secured \$117,798.25 with 14,275 individual pledges. In 1920, the amount asked was \$75,000 and the amount pledged was \$58,000 with 2,600 individual subscribers; in 1921 the amount asked for was \$99,150, the amount pledged was \$106,318, the number of individual subscribers being 11,827. The campaign is held in November of each year and covers the ensuing twelve months.

The South Bend Federation for Social Service is the outgrowth of the old War Chest which was organized by the Chamber of Commerce, but following the Chamber's policy in matters of this kind, permitting such organizations to function alone once they are going concerns, the Federation is now operating with a paid executive.

The campaign for 1921 and again this year was largely carried on through the use of the telephone. A battery of thirty-six phones was installed in the Chamber of Commerce Building, and these were used by women from nine in the morning until five o'clock in the evening, and by the men from six until nine o'clock at night. The men met at the Chamber at 5:30 o'clock and were served supper, leaving the table directly to operate the phone. Every household in South Bend was called, both the men and the women, the women being called by the women, and the men by the men. In addition, the factories were organized, as were the stores, by organizations within themselves which were directed by a factory

chairman and his assistants, and a commercial chairman and his assistants. The cooperating clubs of both men and women were pledged to provide at least thirty-six workers each day and night to care for the phones, and this was done.

We used full-page advertising in bringing the campaign to the attention of the people. This advertising was paid for out of the campaign funds, but we have been able to pay all of the cost of the distribution of the fund from the treasury of the Federation itself, through the interest secured on the money deposited in the banks.

The Federation for Social Service funds are distributed to twelve organizations. A person making a pledge may signify to which organization he wishes it to be assigned. No additional solicitation is permitted during the year. Budgets are presented and monthly statements are prepared and rendered before the monthly allotment is made.

FRANK J. GREEN,
Manager, South Bend Chamber of Commerce.

City Planning in Grand Haven

GRAND HAVEN, MICH.—A carefully developed city plan has been worked out for Grand Haven, and the Chamber of Commerce is preparing an extensive educational campaign to insure its adoption at the spring election.

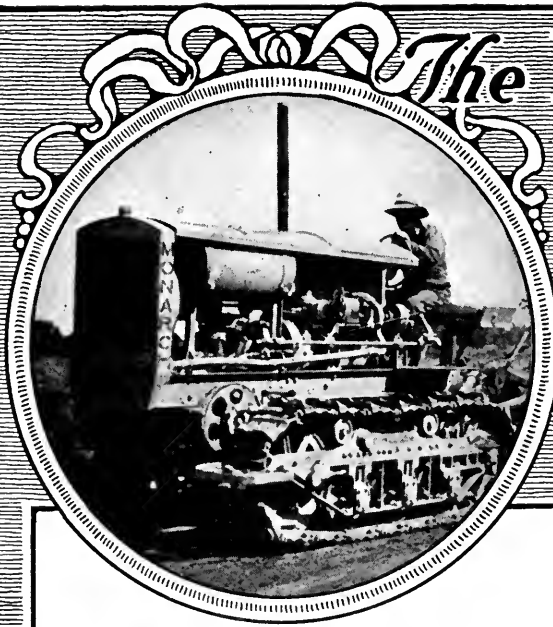
A City Plan Committee, made up of seven of the town's leading citizens, was named by the City Council several months ago with the thought that it might eventually develop into a legalized commission. It now seems certain that this end will be attained.

Lack of understanding as to the meaning of city planning prevailed here, as it does in all small centers, but it so happened that, coincident with the formation of this committee, a newly organized Chamber of Commerce was installed here by the American City Bureau and, through it, the city began growing industrially.

New business enterprises began springing up and the usual abuses occurred, such as location of small groceries and meat markets in the residential districts. Petitions to the Council to restrain such unrestricted development have served to advertise the city plan greatly, as each petitioner was informed by the Council that, once the city plan is in operation, such things would be taken care of automatically. At present,

The MONARCH TRACTOR

for CITIES-COUNTIES
and CONTRACTORS



THE reason for the supremacy of the Monarch Industrial Tractor in the road building and road maintenance field is its consistency of operation. Nothing works more surely to show a profit to the city or to the contractor at the end of a job or in keeping road building costs down to a minimum than to have the tractor that is hauling the different kinds of road machinery always in operating condition and ready for instant service at all times. There are no off days, summer or winter, rain or shine, in the performance of the Monarch Tractor. Its simplicity of construction, accessibility and the high grade material and workmanship, make it the choice of the city and contractor.

MONARCH TRACTORS

INCORPORATED

WATERTOWN

WISCONSIN



because of this influence, it will be the purpose of the Chamber's campaign to educate the people thoroughly as to the various phases of city planning.

Harland Bartholomew, St. Louis engineer, has been engaged to complete and refine the local committee's plan.

FRED McCREA,
Secretary, Chamber of Commerce.

Trenton Studies Its Schools

TRENTON, N. J.—Trenton's school problems were discussed at a community mass meeting held under the auspices of the Chamber of Commerce. A thorough investigation of school conditions had previously been made, at the request of the Chamber, by the chief investigator of the U. S. Bureau of Education, and in the mass meeting the recommendations of the Federal Bureau were submitted. The State Commissioner of Education and a number of well-posted local speakers took part in the program. The theater in which the meeting was held, and which accommodated 1,000, was filled to capacity and several hundred were turned away.

WALTER O. LOCHNER,
Secretary, Trenton Chamber of Commerce.

New Bronze Traffic Towers for Fifth Avenue

NEW YORK, N. Y.—Seven permanent bronze traffic towers have been presented to New York City by The Fifth Avenue Association for erection in Fifth Avenue. Five of the new structures will replace the present temporary towers, and two additional locations will be added to the system in order to extend tower regulation throughout the congested portion of Fifth Avenue.

The first of these towers was presented to Mayor Hylan on December 18, 1922, and is now in active operation at Fifth Avenue and 42nd Street, as "master tower" whose signals control and are followed by the entire system.

Each tower is mounted on a solid granite base 4 feet square and 3 feet high. The towers are 23 feet in height. They are constructed almost entirely of bronze after a design selected in open competition under the rules of the American Institute of Architects, from 130 designs which were submitted by architects throughout the country. Each tower has two clocks, one facing north and one facing south. Each is equipped with a bronze bell weighing 350



NEW FIFTH AVENUE TRAFFIC TOWER

pounds, which will strike at noon and midnight. The space at the top where the traffic policeman stands is enclosed with glass windows and heated by electric stoves.

The tower system of traffic regulation originated on Fifth Avenue, upon the recommendation of Special Deputy Police Commissioner John A. Harriss. It has worked so well that the Board of Estimate appropriated \$250,000 for extending it in other congested streets throughout the city.

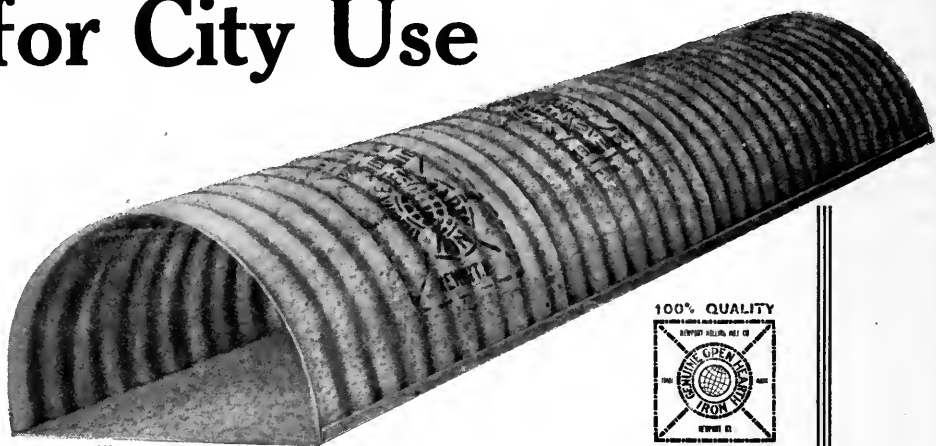
CHARLES H. ROBINSON,
Assistant Secretary, The Fifth Avenue Association.

Chamber Purchases Park Land

MIDDLETOWN, N. Y.—The Chamber of Commerce has purchased and will present to the city 2½ acres of land in the heart of the city for park purposes. The land adjoins another tract of two acres presented to Middletown by a public-spirited citizen. This will give the city a 4¼-acre park occupying a slightly knoll commanding a view of the surrounding country for miles. The idea of the gift was to further the Chamber's park program by a practical demonstration.

ALAN C. MADDEN,
Manager, Middletown Chamber of Commerce.

Half-round Culverts for City Use



100% QUALITY



THIS type of rust-resisting culvert is particularly adapted to city and small town use where there is not sufficient headroom for the installation of the full-circle type. It has the further distinct advantage of being easily cleaned in case an obstruction causes a stoppage.

Newport Culverts are made of **GENUINE OPEN-HEARTH IRON**, guaranteed to be 99.875 per cent pure iron copper alloy. The corrugations furnish the strength and the rust-resisting metal, the endurance.

*Send for booklet giving complete data
on NEWPORT CULVERTS made of
"GENUINE OPEN-HEARTH IRON."*

NEWPORT CULVERT COMPANY

542 West Tenth Street,

Newport, Kentucky

City-County Consolidation in Montana

By P. L. Wills

Secretary-Manager, Butte (Mont.), Chamber of Commerce

"MONTANA can set the standard for the entire nation in creating efficient types of city and county government under its recently adopted constitutional amendment permitting county home rule and city and county consolidation."

Thus Dr. A. R. Hatton of Western Reserve University, Cleveland, nationally recognized authority on municipal administration, has predicted a new distinction for the Treasure State—this time, leadership in modern government. Nearly three years of persistent work on the part of the Butte Chamber of Commerce has made Dr. Hatton's prediction possible.

Ninety-seven per cent of the people of Silver Bow County, the smallest, richest and most populous county in Montana, live within three miles of the center of Butte; yet for half a century two forms of government, city and county, have functioned side by side in administering the affairs of practically the same group. Duplication of expense, overlapping of activities, waste and inefficiency, have been the results from which the taxpayers have suffered grievously. But not until the adoption of the new constitutional amendment by a majority of 17,000 at the November election has it been possible to correct this condition.

The Butte Chamber of Commerce, which adopted city and county consolidation as its major program on reorganization three years ago, has "seen the amendment through" as the preliminary part of that program. Bringing about its introduction through an expert committee, securing its submission to the voters of the state through the Legislature, and then working for its adoption through a carefully planned, statewide publicity campaign, the Chamber has had more than a casual part in the enactment of the amendment, declared to be one of the most far-reaching pieces of legislation of its kind.

The new amendment, which gives Montana greater freedom in working out its local county problems than that now possessed by any other state in the union,

not only was framed to meet the needs of Butte and of other cities that may desire consolidation, but also makes special provision for those counties desiring to adopt a managerial form of government or to make any other changes in their administrations needed for economy and efficiency. Thus it is of double interest to those concerned in municipal progress. The amendment, drafted in a large measure by E. B. Howell, municipal consultant of the Chamber of Commerce, follows:

"The legislative assembly may, by general or special law, provide any plan, kind, manner or form of municipal government for counties, or counties and cities and towns, or cities and towns, and whenever deemed necessary or advisable, may abolish city or town government and unite, consolidate or merge cities and towns and county under one municipal government, and any limitations in this constitution notwithstanding, may designate the name, fix and prescribe the number, designation, terms, qualifications, method of appointment, election or removal of the officers thereof, define their duties and fix penalties for the violation thereof, and fix and define boundaries of the territory so governed, and may provide for the discontinuance of such form of government when deemed advisable; provided, however, that no form of government permitted in this section shall be adopted or discontinued until after it is submitted to the qualified electors in the territory affected and by them approved."

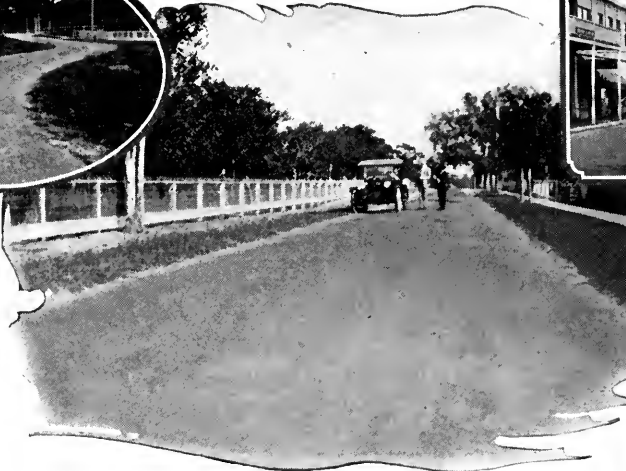
With constitutional obstacles removed, securing the enactment of legislation providing for the consolidation of the governments of the city of Butte and the county of Silver Bow under a commission-managerial administration, is the next number on the Chamber's program. And after the approval of the State Legislature has been obtained, during the coming session, there will still remain the final and perhaps the most difficult step—that of bringing about the adoption of the consolidation charter by the people of Silver Bow County at a special election this spring.

Unhampered by constitutional restrictions, Butte will seek, with Dr. Hatton's assistance, the best form of municipal administration possible. Under the proposed new charter eleven school districts will be unified, the

THE AMERICAN CITY



Gulf Beach Drive,
Ozona.
Tarvia over Florida
lime rock.



Sutherland, Fla.
Tarvia over Florida lime rock.



Clematis Ave., West Palm
Beach. Tarviatreated.



A typical section of Tarvia
surface on the famous Dixie
Highway, Palm Beach County.

Tarvia Roads in Florida —

By no means the least of the attractions that make Florida the "Winter Paradise of America" are the smooth dustless highways that connect the many coast and inland resorts. Many of them are Tarvia roads.

In building these highways the road officials are confronted by unusual conditions. The roads must stand up, with small maintenance cost, not only against heavy traffic but also against the summer rainfall and tropical climatic conditions.

The constantly increasing use of Tarvia in all sections of the State proves how satisfactorily Tarvia roads are meeting these requirements. Today, in Volusia, Brevard, Palm Beach,

Duval, Pinellas and other counties, Tarvia roads are adding alike to the pleasure of winter tourists and to the comfort and prosperity of the year-round residents.

Because of their moderate first cost and easy and inexpensive maintenance Tarvia roads always permit a more extensive good roads program than is possible with any other type of modern highway construction.

Our highway engineers are at the service of any community desiring better and more economical roads.

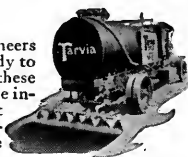
Illustrated booklets describing the various grades and uses of Tarvia will be sent free on request.

Tarvia

**For Road Construction
Repair and Maintenance**

Special Service Department

This company has a corps of trained engineers and chemists who have given years of study to modern road problems. The advice of these men may be had for the asking by anyone interested. If you will write our nearest office regarding road problems and conditions in your vicinity, the matter will be given prompt attention.



| | | | | | | | | |
|----------|-------------|--------------|-------------|----------------------------|-------------|-----------|----------------|------------|
| New York | Chicago | Philadelphia | Boston | The <i>Barrett</i> Company | St. Louis | Cleveland | Cincinnati | Pittsburgh |
| Detroit | New Orleans | Birmingham | Kansas City | | Minneapolis | Dallas | Salt Lake City | Atlanta |
| Bangor | Youngstown | Toledo | Columbus | Richmond | Baltimore | Omaha | Houston | Denver |

THE BARRETT COMPANY, Limited: Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S.

city library system made county-wide, and city and county governments united, effecting a minimum saving of \$500,000 a year. A special bill for optional county home rule under the managerial form will also be submitted to cover the conditions and requirements of rural sections of Montana.

There is no model after which the new Butte city-county charter can be patterned. "The situation presents problems heretofore unattacked. That is why I am particularly interested," declares Dr. Hatton, who has

written most of the modern municipal charters drafted in the last five years. "Other cities have adopted managerial administrations; other cities and counties have merged. But they have only partly succeeded in obtaining the fullest measure of efficiency, economy and responsibility in government; they have gone only part of the way. Apparently nothing stands in the way of Montana in attaining results that other states cannot hope to secure for two years at least."

Library Expenditures, Circulations and Branches

THE AMERICAN CITY is indebted to George F. Bowerman, Librarian of the Public Library of the District of Columbia, for the accompanying table, which is reproduced from Dr. Bowerman's

last annual report. The figures given cover cities above 200,000 population, the data having been compiled partly from published reports, but also in large part by direct application to the libraries.

| Cities (ranked according to population) | Population. | Expenditures. 1921 or 1922.. | Per capita expenditures. | Home circulation (volumes). | Expenditure per volume circulated. | Per capita circulation (volumes) | Number of branches. | Branches housed in separate buildings devoted exclusively to library purposes. |
|---|-------------|------------------------------|--------------------------|-----------------------------|------------------------------------|----------------------------------|---------------------|--|
| New York City.... | 5,744,914 | \$2,287,370.52 | \$0.398 | 18,266,644 | \$0.125 | 3.18 | 90 | 72 |
| New York Public ¹ | 3,176,558 | 1,254,417.03 | .395 | 10,226,366 | .123 | 3.22 | 43 | 42 |
| Brooklyn..... | 2,018,356 | 779,350.87 | .386 | 6,072,707 | .128 | 3.01 | 27 | 23 |
| Queens..... | 2 550,000 | 253,602.62 | .461 | 1,967,571 | .129 | 3.58 | 20 | 7 |
| Chicago..... | 2,701,705 | 853,876.97 | .316 | 7,472,768 | .114 | 2.76 | 35 | 5 |
| Philadelphia..... | 1,823,779 | 426,445.00 | .234 | 3,992,278 | .107 | 2.19 | 28 | 27 |
| Detroit..... | 993,678 | 822,696.89 | .828 | 2,996,771 | .274 | 3.01 | 16 | 16 |
| Boston..... | 2 822,000 | 734,892.07 | .894 | 2,672,646 | .275 | 3.25 | 31 | 12 |
| Cleveland..... | 796,841 | 859,269.06 | 1.078 | 4,672,252 | .184 | 5.86 | 52 | 18 |
| St. Louis..... | 772,897 | 392,276.70 | .507 | 2,308,533 | .170 | 2.99 | 13 | 6 |
| Baltimore..... | 733,826 | 255,831.56 | .349 | 863,765 | .296 | 1.18 | 23 | 22 |
| Los Angeles..... | 2 700,000 | 408,296.68 | .583 | 3,603,181 | .113 | 5.01 | 40 | 8 |
| Pittsburgh..... | 2 600,000 | 496,468.89 | .827 | 2,124,125 | .234 | 3.54 | 9 | 9 |
| Old City..... | | 422,954.43 | | 1,632,385 | | | 8 | 8 |
| Allegheny..... | | 73,514.46 | | 491,740 | | | 1 | 1 |
| Milwaukee..... | 2 538,469 | 246,214.85 | .457 | 2,199,359 | .112 | 4.08 | 11 | 3 |
| Buffalo..... | 506,775 | 218,049.75 | .430 | 2,049,082 | .106 | 4.04 | 7 | 1 |
| San Francisco..... | 506,676 | 200,357.48 | .395 | 1,588,173 | .126 | 3.13 | 9 | 9 |
| Cincinnati..... | 493,678 | 292,757.80 | .593 | 2,083,420 | .140 | 4.22 | 24 | 14 |
| Washington..... | 437,571 | 152,091.00 | .347 | 1,018,414 | .149 | 2.33 | 1 | 1 |
| Minneapolis..... | 4 415,419 | 283,957.43 | .683 | 1,465,591 | .194 | 3.53 | 16 | 10 |
| Newark..... | 414,524 | 219,115.00 | .528 | 801,116 | .273 | 1.93 | 1 | 1 |
| New Orleans..... | 387,219 | 62,892.80 | .162 | 454,380 | .138 | 1.17 | 5 | 5 |
| Kansas City..... | 2 350,000 | 213,896.29 | .611 | 1,125,261 | .190 | 3.21 | 13 | 2 |
| Seattle..... | 323,124 | 288,702.01 | .893 | 2,097,858 | .138 | 6.49 | 9 | 8 |
| Indianapolis..... | 314,194 | 256,893.12 | .818 | 1,191,981 | .215 | 3.79 | 18 | 11 |
| Jersey City..... | 298,103 | 152,870.26 | .513 | 1,347,638 | .113 | 4.52 | 7 | 2 |
| Rochester..... | 295,750 | 115,213.08 | .389 | 1,228,252 | .094 | 4.15 | 7 | 1 |
| Louisville..... | 2 286,369 | 130,306.08 | .455 | 1,207,348 | .108 | 4.22 | 12 | 9 |
| Portland..... | 2 275,898 | 274,446.76 | .995 | 2,037,545 | .135 | 7.38 | 17 | 11 |
| Columbus..... | 2 275,000 | 48,250.00 | .175 | 334,112 | .144 | 1.21 | 0 | 0 |
| Denver..... | 256,491 | 122,425.04 | .477 | 1,121,717 | .109 | 4.37 | 8 | 8 |
| St. Paul..... | 2 250,000 | 219,917.85 | .880 | 1,385,000 | .159 | 5.54 | 4 | 3 |
| Toledo..... | 243,164 | 113,703.31 | .467 | 1,103,371 | .103 | 4.54 | 7 | 5 |
| Oakland..... | 2 240,000 | 147,841.68 | .616 | 1,036,857 | .142 | 4.32 | 13 | 4 |
| Providence..... | 237,595 | 203,450.44 | .856 | 685,949 | .296 | 2.89 | 5 | 1 |
| Atlanta..... | 200,616 | 64,925.00 | .324 | 437,062 | .148 | 2.18 | 5 | 3 |
| Totals and averages..... | 23,236,275 | 11,565,701.37 | .498 | 76,972,449 | .150 | 3.31 | 536 16.75 | 307 9.59 |

¹ Circulation Department only.

² Estimated.

³ City and county.

Ornamental and Efficient Street Lighting



General Electric Novalux with *Holophane Dome Refractor*

A combination of ornamental appearance and efficiency. The outer globe gives size and appearance while the Holophane Dome Refractor over the lamp distributes the light with the usual Holophane efficiency.



HOLOPHANE GLASS CO. Inc.
Dept. A. C.-2, 342 Madison Ave., New York
Works: Newark, Ohio
In Canada: Holophane Co., Ltd., 186 King St., W., Toronto.

Street Lighting with Mazda Lamps*

By R. E. Greiner

Street Lighting Specialist

Park Lighting

PARK lighting is a phase of outdoor illumination which is of considerable magnitude and without doubt a necessary element of park layout. The walks and roadways in parks should not be as brilliantly lighted as a street proper, except in cases of heavily traveled thoroughfares within the park areas. A certain sense of

Lighting standards, even more, should exhibit intelligent design, pleasing in proportion and lines. Much has been accomplished in park lighting in the last few years, but there is still room for a great deal of improvement. Good practise in park lighting demands ornamental fixtures. These may be obtained in different forms which harmonize well with the various



A RADIAL WAVE STEEL REFLECTOR WITH PORCELAIN SURFACE, USED IN SUBURBS OF NEWBURGH, N. Y.

duskiness within a park is very desirable of a summer evening and can well be allowed in so far as may be found to be compatible with order in the park.

It is a foregone conclusion that in a park which is to be developed to the highest artistic standard, the appurtenances of the park should be designed for beauty of individual detail. In the development of parks in foreign cities, even the receptacles for waste paper are designed conscientiously.

park designs. One very effective design of lighting unit is in the form of a lantern (either mounted on a pedestal or suspended from an ornamental mast arm). Other types, such as shown in the first illustration, make very desirable means of illumination for this purpose; both the diffusing and refracting types of luminaires find application.

The placing of the lighting standards should be determined with regard to an even distribution of light and at the same time with reference to the lines of the park

* Continued from January issue.



The personal interest
of our workmen is
reflected in the
quality of
King White Way Posts

PRIDE, as well as the skill of our
men, goes into each and every
King White Way Post.

A careful examination of King White Way Posts will reveal to you that they are a work of art, wrought by those skilled in producing Ornamental Street Lighting Equipment.

It would be a pleasure to take you through our factory where you could see how much care we give our products during the process of manufacture.

Each workman realizes that in allowing nothing but first class workmanship and material to pass through our plant; that he is carrying out fully, the policy of this institution in producing "King Quality" White Way Posts.

We probably can be of real service to you in making recommendations and laying out a street lighting system for your business district, residence sections, or along your parks and boulevards.

It is always our pleasure to give any community the advantage of our many years experience as street lighting specialists. Write us today about your contemplated street lighting improvements.



King Manufacturing Co.
St. Joseph, Mo. Chicago, Ill.

design. It is obvious that lighting standards should not be so placed as to interfere during the day with view or vista and thus become a distracting element in the park design; in formal parks, in fact, they may be made to serve as a very helpful accent to the design and should be used for this purpose by the park designers, much as ornamental fixtures are used by architects in the composition of the buildings. Ornamental standards may be obtained in various designs to fit in with the different classes of landscape architecture.

SIZE AND SPACING OF UNITS FOR PARK LIGHTING

| Type of Unit | Size of Lamp— | | Spacing Feet | Mt. Ht. Feet |
|-----------------------------|-------------------|-------------|--------------|--------------|
| | Lumens | C.P. | | |
| Ornamental with refractors: | | | | |
| | 2,500-4,000-6,000 | 250-400-600 | 100-200 | 12-20 |

The Lighting of Boulevards

Every city prides itself on having one or more stretches of well-paved streets through the best section of the town, providing a promenade for automobilists. These streets, or boulevards, as they are called, are very popular with car owners, resulting in a heavy flow of traffic, particularly in the evening.

To provide safe conditions on the boulevard requires a high level of illumination. Enough light should be provided to elimi-

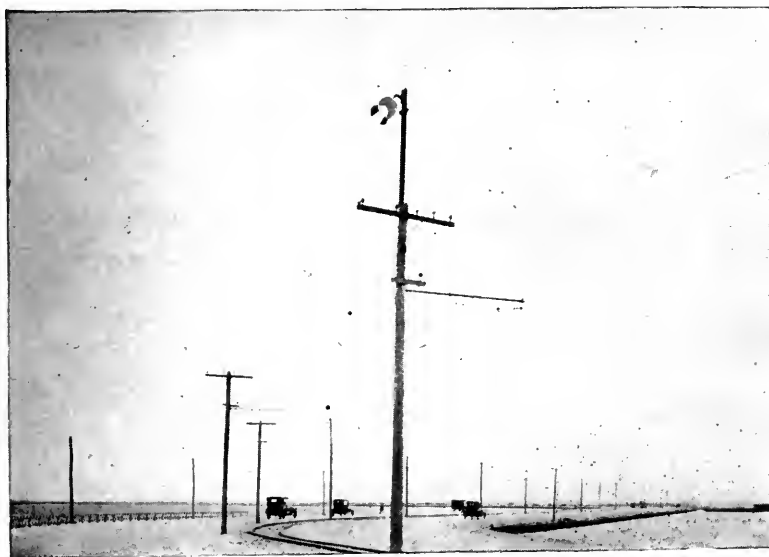
nate the necessity of bright headlights on the cars. In this way the great nuisance of glaring headlights is avoided. The driver can readily discern objects in his path, and is able to see accurately and quickly, thereby reducing accidents to a minimum. Traffic is also handled much more readily and speedily under the higher intensity of illumination, thus increasing the capacity of the boulevard.

The lighting of boulevards is accomplished with some form of ornamental unit in keeping with the character of this class of street. In some cases, a pendant type unit with diffusing globe has been used.

In regard to the locating of the light sources, it is found that these streets generally require a row of units hung or mounted along either curb. Some boulevards of a more formal character have a narrow parkway through the center of the street. Under these conditions the lighting units may be mounted in a single row along the parkway. This arrangement is economical of light, and very good results have been obtained.

SIZE AND SPACING OF LAMPS FOR BOULEVARDS

| Type of Unit | Size of Lamp— | | Spacing Feet | Mt. Ht. Feet |
|--------------|---------------|---------|--------------|--------------|
| | Lumens | C.P. | | |
| Pendant..... | 4,000-6,000 | 400-600 | 100-200 | 20-25 |
| Ornamental.. | 4,000-6,000 | 400-600 | 100-150 | 15-20 |



HIGHWAY LIGHTING UNIT SHOWING NESTED PARABOLA CONSTRUCTION AND POLE EXTENSION



(c) **How 10,000 Actually Heard
Governor Donahey's Inaugural Speech**

When Victor Donahey, Governor elect of Ohio, was inaugurated his speech was heard by over 10,000 people grouped about the Capitol in Columbus.

This huge audience was able to hear every word clearly and distinctly by means of a

***Western Electric*
Public Address System**

There is a system to meet every requirement of municipal fire, police and educational departments where the clear, distinct and instantaneous transmission of information is essential.

Write for Bulletin 672-CC. It gives full details of indoor and outdoor equipment-products of an organization that has been making and distributing reliable communication equipment since 1869.

Since
1869
Makers of
Electrical
Equipment

***Western Electric
Company***

110 William Street

New York City



DAY VIEW OF AN INSTALLATION OF HIGHWAY LIGHTING UNITS ON CAUSEWAY BETWEEN MIAMI AND MIAMI BEACH, FLA.

These 2,500-lumen lights are spaced 300 feet apart and mounted 30 feet high

Outlying Suburban Sections, Alleys and Side Streets

In the thinly settled residential sections in the suburban districts, street lighting becomes mainly an economic problem. The houses are spaced quite widely, with sometimes a whole block left vacant. It is evident, however, that all these streets must be lighted to provide safe conditions for those persons living beyond and around these unsettled areas. Future developments also require that some light be furnished.

An often-overlooked consideration in street lighting is that of illuminating alleys and unimportant side streets. Insufficient attention is paid to this form of lighting, making these byways a menace to public safety. That some light should be furnished is quite evident. A high intensity is not practical or necessary. Enough illumination should be provided, however, to eliminate dense shadows and make patrolling convenient.

To accomplish the lighting of these streets satisfactorily, a lighting unit of low cost must be used. A wide distribution of light must be obtained, to allow as few units as possible. The unit itself should be of the bracket type for streets, and of center suspension for alleyways. A porcelain radial wave reflector meets the requirements very well. The reflecting surface is non-deterio-

rating and has a high reflective power, re-directing the upward rays of the lamp back to the street surface. The long life of this sort of fixture tends to make it quite popular for this form of lighting. Then, too, as the outlying districts are built up, the brackets may be replaced by larger units and moved further out and again put into use. Steel reflectors with a white porcelain enameled reflecting surface are also used quite extensively for this class of street.

SIZE AND SPACING OF LAMPS FOR ALLEYS AND SUBURBAN SECTIONS AND SIDE

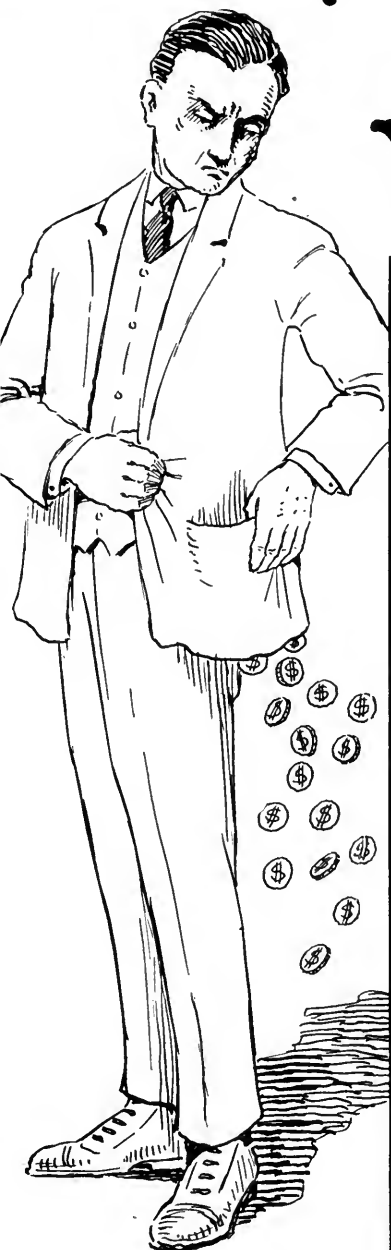
| Type | STREETS Size of Lamps— | | Spacing Feet | Mt. Ht. Feet |
|---------------------------------|---------------------------|-------------|-----------------|-----------------|
| | Lumens | C.P. | | |
| Porcelain or steel radial wave: | 1,000 | 100 | 50-100 | 12-15 |
| Dome radial wave: | 1,000-2,500-4,000 | 100-250-400 | 100-150 | 13-20 |
| Band refractor types: | 1,000-2,500-4,000 | 100-250-400 | 100-300 | 15-22 |

Note.—Lamps of less than 1,000 lumens output are not generally economical for street lighting.

Highway Lighting

The ever-increasing amount of traffic over our main highways has so congested them that the need of some means of relief has become acute. The number of cars on some of the metropolitan highways has swelled to such a volume that there is a continual procession of automobiles, especially during the evening hours; and while the number of vehicles upon the highways has increased so materially, the capacity of the highways

The Hole in Your Pocket—



—is a drain on your finances. A nickel, a dime or a quarter slips through and perhaps you do not notice it, but when you come to check up at the end of the month, you find that many dollars have been lost. The same is true when water departments try to check up the amount of water delivered to the mains and the amount actually used by consumers. They find there have been losses that are hard to account for.

A PITOMETER SURVEY

definitely locates the losses from blown joints, broken mains, neglected valves and the illegal use of water, as well as the underregistration of large meters. It makes a strict accounting for water delivered and greatly increases the income of the water department making every drop of water produce revenue. We shall be glad to send you a list of cities in which Pitometer water waste surveys have been made and complete data regarding the surveys on request.

THE PITOMETER CO.
52 CHURCH ST., NEW YORK CITY

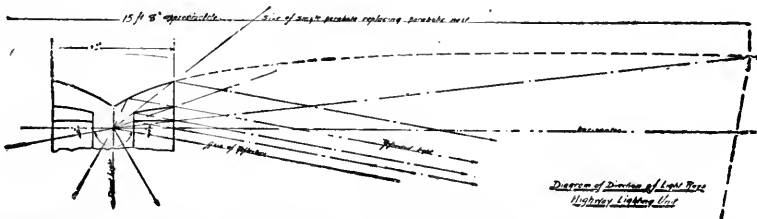
has remained practically constant.

As a direct result of this congested condition, there has been a considerable increase in the number of serious accidents happening upon our main highroads. Precautions have been taken to protect the traveling public by posting all sharp curves, narrow bridges, steep grades and the like. The protection afforded by this means does not, however, extend adequately beyond the hours of daylight, when the automobiles have to depend entirely upon their headlights. While recent improvements in headlamps through the enforced use of proper lenses and sizes of lamps has greatly improved night driving from a safety standpoint, there is still considerable objection-

higher speed. The seriousness of a collision or accident to a vehicle of this nature would be great, and every possible means should be taken for the protection of the traveling public.

Another danger of night driving is present in the form of hold-ups or robberies. During the last three or four years there has been a great deal of activity along these lines, until in certain sections of the country no one stops to render assistance when requested, for fear of being waylaid.

The severe requirements for highway lighting make it a very difficult problem to solve. One of the most important considerations is cost. It is obvious that as few units as possible should be used to provide



SKETCH SHOWING DIRECTION OF LIGHT RAYS AS CONTROLLED BY HIGHWAY LIGHTING UNIT

able glare present. The cause of a large percentage of night fatalities has been the inability of vehicle drivers to perceive pedestrians on the highway at a safe distance to avoid collision.

The increasing number of trucks operated on all-night schedule has added another danger to night traffic. They move comparatively slowly and are generally equipped with less efficient headlamps than are passenger cars. This means a general slowing up of the entire traffic along the highway, and also seriously augments the possibility of collision. Because of the inadequate illumination afforded by headlights, the driver is also liable to strike obstructions or holes and do considerable damage both to the truck and to the highway. Quite often the driver, not being able to make out the outline of the road clearly, runs off the road-bed onto the side of the road, which, being of poorer construction, cannot stand the weight thrust upon it.

Night traffic is also increased by the large number of passenger busses operating between cities. These are of considerable size and come under the truck classification, although they are essentially of a

sufficient illumination for safety. There should be such illumination upon the roadway as to enable the driver to see pedestrians or obstacles in his path at a safe distance, and the outline of the road at all times. Enough light should be provided to eliminate, as far as possible, the glare from approaching cars. Dangerous curves, steep grades and narrow bridges to be properly protected at night must be readily visible.

Only recently have any improvements been made in highway lighting to bring up the standards to conform with the exacting requirements. A highway lighting unit has been designed by the General Electric Company which gives a very satisfactory illumination for this purpose. This unit, which is called the Novalux highway lighting unit, is designed especially for use with a 250-candle-power lamp. The light given off by this lamp is collected by two sets of nested parabolic reflectors and concentrated upon the highway in both directions, no light escaping upward or to the surrounding fields. The efficiency of this unit is so great as to give a very satisfactory light with a spacing of 300 feet, or 18 to the mile. Spacings as high as 600 feet have been tested, but gave

What Are You Doing to Protect Your Shade and Ornamental Trees?

NOW is the time to insure the health and beauty of your shade and ornamental trees, shrubs and vines. Many of their ills are controlled by the use of Scalecide as a dormant spray applied just before the leaves come out in the spring. It has been the standard spray for parks and cemeteries for nearly 20 years, and is known the country over as

"The ~~Complete~~ Dormant Spray"

Scalecide is economical to use because it goes so much further than lime sulphur, and it is easy and pleasant to apply. It does not injure the hands or face—in fact it is harmless even to the eyes. Nor does it mar the paint on buildings, trellises and fences.

Scalecide has been used for years by the park departments of Brooklyn and Bronx, New York; Boston; Buffalo; Rochester; Detroit; St. Louis; Oak Park, Illinois; Highland Park, Michigan; Milwaukee and many other cities noted for their well-kept parks.

Cottony, Maple Scale and Lecanium Scale are easily controlled with Scalecide, one thorough spraying often being sufficient for two or three years. The fungicidal action of Scalecide helps to prevent decay and the entrance of disease in pruning wounds and other injuries to the bark—and many cankers start healing up. Scale insects, often very injurious to conifers, can be effectively controlled with entire safety by spraying with Scalecide in the spring just before new growth starts. Even Spruce Gall has given way to thorough treatment with Scalecide.

Write us at once for complete information about Scalecide, "The Complete Dormant Spray." Please address Dept. 42

B. G. PRATT CO. 50 Church St. NEW YORK CITY

SCALECID

THE COMPLETE DORMANT SPRAY

SCALECID

less effective illumination even when used with correspondingly higher-powered lamps. The unit is mounted on poles along the edge of the highway at a hanging height of at least 30 feet. This height must be used to assure good distribution and to avoid glare. An adjustment of the units may be made to take care of the ordinary variations on pole positions and road curvatures. A modification of the pole type may be obtained by overhead suspension.

Extensive demonstrations and installations which are now in use have shown that with the recommended spacing and lamp size the highway is very satisfactorily lighted with rather more illumination than is found on most residence streets in cities. While traveling beneath these units, it is found possible to drive with simply dim

lights. With bright headlights the glare is reduced to such an extent as to make driving conditions comfortable and safe. The illuminated road stretches away in front of the car, presenting the appearance of a broad band of light, and shows up any objects or irregularities which may be present. Drivers are able to judge distances much more accurately under the well-lighted condition. This is conducive to confidence on the driver's part, consequently accelerating general traffic speed, and tends to increase the night traffic, thereby relieving the day congestion. It has also been found that upon a well-lighted road there has been practically no trouble caused by criminal activities.

Illustrations by courtesy of Edison Lamp Works, General Electric Company.

SUMMARY—STREET LIGHTING PRACTISE

| Type of Street | Size of Lamps | | Spacing Feet | Mt. Ht. Feet |
|---|---------------|-----------|--------------|--------------|
| Kind of Unit | Lumens | C.P. | | |
| Main business section: | | | | |
| Ornamental | 6,000-25,000 | 600-2,500 | 60-150 | 14-25 |
| Secondary business section: | | | | |
| Ornamental | 6,000-10,000 | 600-1,000 | 100-125 | 15-20 |
| Pendant with refractor..... | 6,000-10,000 | 600-1,000 | 100-125 | 20-25 |
| Main thoroughfares: | | | | |
| Ornamental | 4,000- 6,000 | 400- 600 | 75-150 | 15-20 |
| Pendant with refractor..... | 4,000- 6,000 | 400- 600 | 100-200 | 20-25 |
| Residential: | | | | |
| Pendant (at corners) | 2,500- 6,000 | 250- 600 | 200-350 | 15-20 |
| Pendant (more closely spaced)..... | 1,000- 2,500 | 100- 250 | 100-200 | 10-18 |
| Ornamental | 1,000- 4,000 | 100- 400 | 100-250 | 10-16 |
| Parks: | | | | |
| Ornamental with refractor..... | 2,500- 6,000 | 250- 600 | 100-200 | 12-20 |
| Boulevards: | | | | |
| Pendant or ornamental (refractors)..... | 4,000- 6,000 | 400- 600 | 100-200 | 15-20 |
| Outlying suburban section, alleys and side streets: | | | | |
| Refractors and radial-wave type.... | 1,000- 2,500 | 100- 250 | 100-250 | 15-20 |
| Highways: | | | | |
| Novalux highway unit | 2,500 | 250 | 300 | 35 |

Better Highways to Relieve City Congestion

THE highway engineer is needed sorely at this moment, the engineer with daring imagination, to help scatter the dwelling houses and residence facilities of cities of more than 25,000 population far and wide into the outlying open country, and thus in some appreciable way to relieve congestion in American cities.

A large factor in decentralizing city homes is the transportation problem, which challenges the genius of highway engineers. Less than one-third the entire population of the United States is on farms. Sixty-eight cities of more than 100,000 population each contain nearly another third. The thirty-odd millions of people living in cities of 25,000 population and over are being

brought into immediate contact with the commodities of living, the skill of service, and the institutional wisdom of the world, whereas those who live on farms receive few of these advantages.

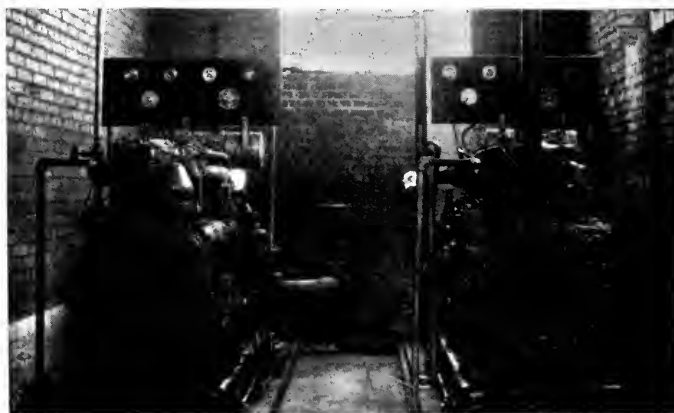
A system of complete terminal towns connected by rail or water with wholesaling cities, and by an adequate highway system to groups of farm population, is the solution for taking the curse off farming and "opening the door to a good kind of life on the farm."

—Dr. C. J. Galpin, U. S. Department of Agriculture, at Second Annual Conference on Highway Transportation Education.

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APPLY TO YOU?

1. Are you paying the primary power rate?
2. Are you paying for power based on maximum demand?
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Buffalo, N. Y.

U. S. A.

Motor Car Accidents

Ontario Department of Public Highways Publishes Admirable Summary of Causes in Its Most Recent Annual Report

MOTOR car accidents may be divided into two classes—those which are unavoidable, and those which are avoidable. The driver of every motor vehicle, in spite of all skill and care, is subject to the possibility of an accident, and generalities with respect to placing the responsibility for accident on the driver of the car are unreasonable and unjust. The steering gear or other mechanism may get out of order or, when an adult pedestrian steps without warning from the curb directly in front of a moving car, no form of traffic regulation will prevent accident. Excessive speed is the most frequent cause of accidents.

The present speed law of Ontario permits a maximum speed within urban municipalities of 20 miles an hour, to be reduced to 10 miles at street intersections. With this speed is coupled the obligation placed upon the driver of a motor vehicle to drive with due care under all circumstances; therefore, on occasion a speed of five miles or any movement at all may be illegal. The former maximum speed of 15 miles an hour unduly limited the usefulness of the motor car and placed the driver in an unfortunate position legally, under the ordinary methods of speed enforcement. To overcome excessive speeding on city streets, a more rigorous enforcement of the present law should be applied, keeping motorists strictly within the speed laws. With this done, the speed limitations would be found adequate.

Too many accidents occur to children. The presence of children on a street should be a warning to the driver of a motor car to drive with extreme care. The horn should be sounded to warn children playing on the sidewalk that a motor car is approaching. Children absorbed in play are thoughtless and irresponsible and it is the plain duty of a driver of a motor vehicle to recognize these conditions. That a child runs from the sidewalk in front of a motor car is not always a sufficient excuse for an accident. For the driver of a motor vehicle, if he is competent to drive, should

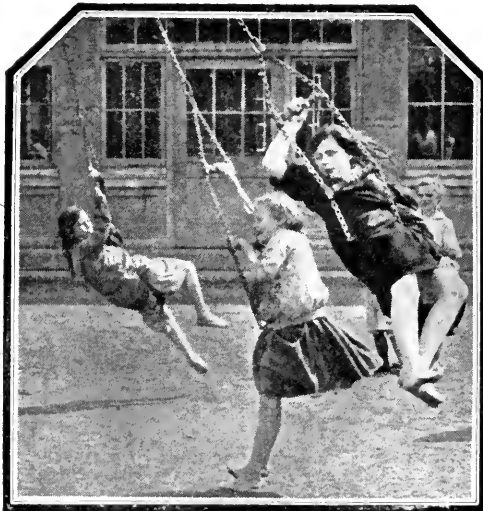
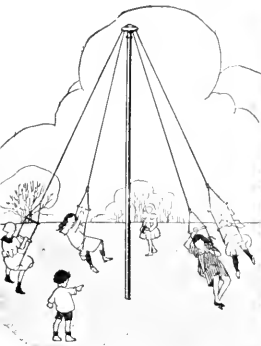
know that children do such things and he should be reasonably prepared for the emergency. Accidents to children are in many cases an evidence of reckless driving.

Accidents to pedestrians are caused in a degree by an unfortunate attitude of mind which belongs to some drivers and which assumes that the pedestrian should get out of the way of the vehicle. Such a driver, instead of reducing speed and bringing his vehicle under sufficient control, merely toots the horn. Should the pedestrian fail to leap to safety or should he become confused, stand still or turn back, an accident results. The driver of a motor car should have his car under such control that the ordinary pedestrian is not endangered, particularly at street intersections.

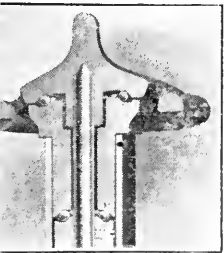
On the other hand, some pedestrians are careless and unreasonable in their attitude to motor cars. They loiter on the roadway and in front of motor cars to a degree that invites accidents. They are willing to accommodate themselves to other pedestrians or to horse-drawn vehicles, but in the case of motor cars their mental attitude is one of antagonism. They ignore the fact that the movements of pedestrians are much more readily controlled than that of a motor car. Were pedestrians to exercise more care in leaving the curb, and were motorists to remember that pedestrians, particularly children, are apt to leave the curb carelessly, the number of accidents on city streets would be much reduced.

Glaring headlights are a fruitful cause of accidents, particularly on country roads, and a simplified method of determining and overcoming glare is greatly to be desired in order that the anti-glare law may be more effectively enforced.

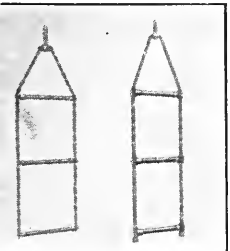
On country roads excessive speed is still the most prolific source of accidents. Passing other vehicles on hills and curves and at intersections where vision is interrupted is merely evidence of the desire for speed in its most dangerous form. There is need that all main highways be patrolled by officers on motor-cycles in order that reckless driving may be prevented.



Safety, Service and Durability are Exemplified in the Medart Giant Stride



Twenty-five ball bearings
at top and thirteen below
form a frictionless, inde-
structible bearing.



Medart Giant Strides are
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The ladders can be sub-
stituted at slight additional
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EACH piece of MEDART Playground Apparatus has some outstanding features in design and construction which make for greater Safety, greater Service and greater Durability. For example, in the MEDART Giant Stride, the most important feature is the head-piece. It is made with a double set of ball bearings—25 balls at the top and 13 below. This construction allows it to turn smoothly without friction—resists wear—and equalizes the strain no matter from what angle applied.

MEDART PLAYGROUND EQUIPMENT

As a consequence of such features of recognized superiority, MEDART Equipment has been, for 50 years, the first choice of civic officials, physical directors, school boards, and others entrusted with the purchase of playground apparatus. MEDART prices are much lower than you would expect for apparatus of such outstanding merit.

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It illustrates the full line of Medart Playground Equipment. Also contains information on playground planning, based on our long experience in this work. This catalog sent free on request.

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San Francisco, Rialto Bldg.

The City's Legal Rights and Duties

Information for City Attorneys and Other Municipal Officers, Summarizing
Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Power to Prevent Removal of Surface Support in Mining Operations

The right of mine operators to cause subsidence of soil in their operations was considered by the United States Supreme Court in a case decided December 11, 1922. The majority opinion written by Justice Holmes and the dissenting opinion written by Justice Brandeis, debate the question whether the police power is broad enough to authorize a state to prevent development of mining property in the interest of maintaining surface support and without compensating the mine owners for their resulting financial loss. The Court holds against the existence of such power.

The Pennsylvania Legislature enacted a law forbidding conduct of mining in such way as to remove the surface support, excepting where ownership of the surface and ownership of the mining rights are identical, or where the surface owners consent. The validity of the law was successfully attacked in the case of *Pennsylvania Coal Co. vs. Mahon*, on the ground that it involved an unconstitutional attempt to deprive mine owners of their property rights without compensation.

It is specifically decided that if a city like Scranton, Pa., sees fit merely to acquire street rights from surface owners, it cannot complain of the subsidence of a street as a result of mining below. On this point, the opinion of the Court says:

"The rights of the public in a street purchased or laid out by eminent domain are those that it has paid for. If in any case its representatives have been so short-sighted as to acquire only surface rights without the right of support we see no more authority for supplying the latter without just compensation than there was for taking the right of way in the first place and refusing to pay for it because the public wanted it very much."

Taking a contrary view, Justice Brandeis's dissenting opinion argued for a holding that the police power was broad enough to sustain the law. He invoked the

well-established legal principle that no one is entitled to so use his property as to commit a public nuisance. Instancing analogous cases in which the principle has been recognized by the Supreme Court, Justice Brandeis refers to decisions which have upheld the public right to restrict the location of brickyards, oil tanks and factories and otherwise to limit the use of private property without compensating the owner for his pecuniary loss.

Until and unless the Supreme Court recedes from the view announced by its majority members, it follows that cities must either run the risk of surface subsidence resulting from the exercise of a subterranean owner's property rights, or buy off those rights.

Municipal Liability for Creating Nuisance in Constructing Public Works

In a suit involving the liability of defendant city for so constructing a sewer system as to cause flooding of plaintiff's premises, the Georgia Court of Appeals announced a decision of which the following is an abstract:

While the maintenance by a city of a sewerage drainage system is connected with the preservation of the public health, and therefore is a governmental function, and while ordinarily the city cannot be held liable for any damage to person or property caused by the negligence of any of the city's servants while engaged in such work, and while a city ordinarily cannot be held liable for damage to person or property caused by an error of judgment on the part of its authorities in adopting a general plan of drainage and in determining when, where, and of what size, and at what level, drains or sewers shall be located, yet, where such negligence or error of judgment results in the creation and maintenance by the city of a nuisance, permanent in its character, and dangerous to life and health, and where



Patrolling Every Highway in the State of Maine

EQUIPPING 14 members of the Maine State Highway Department with Harley-Davidsons proves again the great value of the motorcycle for public service.

States, counties, cities, towns — over 1,100 of them in all—are using Harley-Davidsons to fight crime, for patrol work and enforcing speed laws, and for a variety of service duties.

At a cost of only a few cents a day for maintenance, an officer's efficiency is increased many times when he is mounted on the swift, dependable, economical Harley-Davidson. What other mount costs so little to run? (Harley-Davidsons average two cents a mile—"gas," oil, tires and all.)

Ask your dealer for the *reduced prices* on 1923 models. Ten improvements, too. Or, write us for special Police Motorcycle literature. No obligation to you.

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the effect of the nuisance is specially injurious to an individual by reason of its proximity to his home, he is entitled to recover adequate compensation for his injuries, including damages for any decrease in the market value of his realty. (*Lewis vs. City of Moultrie*, 110 Southeastern Reporter, 625.)

Apportioning the Expense of Interurban Improvements

An opinion of Massachusetts Supreme Judicial Court (127 Northeastern Reporter, 635) deals with the validity of laws under which a state directs that the cost of an improvement be apportioned among different political subdivisions of the state. The Court was called on to determine the validity of a bill providing for apportionment of the expense of a bridge over the Connecticut River, 31 per cent against the county of Hampden, 55 per cent against the city of Springfield, 13 per cent against the town of West Springfield, and 1 per cent against the town of Agawam. Upholding the validity of the measure, the Court said:

"It is not essential that the burdens of taxation should be imposed upon cities and towns in proportion to the benefits received by each from the expenditure of the money raised, although this rule often has been prescribed and followed. Assessments of the cost and maintenance of bridges and other public improvements have been laid with regard to other considerations. Such expenses have been apportioned not only 'with reference to all circumstances of benefit to the respective municipalities affected,' but also with reference 'to their population, extent, and ability to bear the burden,' *Commonwealth v. Newburyport*, 103 Mass. 129, 134; *Boston, Petitioner*, *supra*. The expenses of the Metropolitan sewer system and of the Metropolitan park system have been apportioned according to the valuation of the several municipalities and according to percentages derived from combinations of valuation and population and upon other bases. In *re Metropolitan Park Commission*, 209 Mass. 381, and cases there collected. Even in the apportionment of special assessments upon privately owned land for the expenses of local improvements which must be proportional and ordinarily not in substantial excess of the benefits, *White v. Gove*, 183 Mass. 333, 67 N. E. 359, numerous and different methods have been upheld, as for example, assessments according to frontage to area, to valuation either with or without buildings, or to a combination of one or more of these with others have been upheld."

A Legislature May Authorize a City to Acquire Property in Another State

Holding that a city in Washington validly may acquire property in an adjoining state for water-works purposes when so authorized by the Washington Legislature, subject to the laws of the adjoining state, the Washington Supreme Court said in the case of *Langdon vs. City of Walla Walla*, 193 Pacific Reporter, 1:

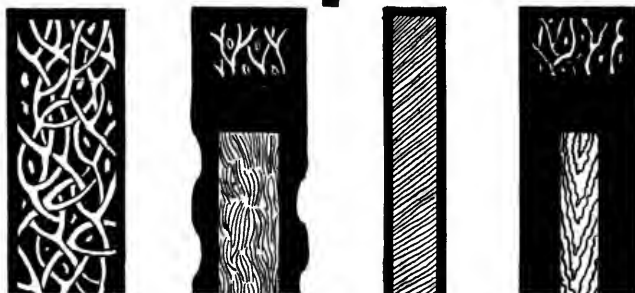
"The question that, to allow a city of this state to acquire property of the nature here in question in another state would, in effect, be an assumption of extraterritorial jurisdiction, we think is wholly without force, in view of the fact that the city's ownership of such property situated outside its own territorial limits, whether within or without this state, is only the ownership and control over such property in the city's proprietary capacity. Such an ownership does not, to our minds, suggest an assumption of extraterritorial governmental jurisdiction, either on the part of the state of Washington or of its cities, over property, situated in another state. If the laws of Oregon permit the city of Walla Walla to acquire and own within that state property of the nature and for the use here in question—which as we think, will presently appear, though that is apart from this particular inquiry—manifestly we must presume that the courts of Oregon will protect the property rights the city so permissively acquires in that state, the same as they will protect the property rights of any other similar ownership of property therein, and that, should such protection be refused by the Oregon courts, the courts of the United States will afford such protection.

"The state of Oregon may, of course, if it so choose, withhold from the cities of this state the right to acquire property in that state, just as it may withhold such right from any other foreign corporation, but that does not argue that this state has not given to its cities such power of acquisition and ownership of property as will enable them to acquire property in Oregon by consent of that state."

Limitations on Municipal Power to Annex Territory

In a proceeding to annex territory to a village, the property annexed must be so conditioned as properly to be subjected to village government. Whether it is so conditioned is primarily for the voters; but if their action is clearly arbitrary, for the purpose of increasing sources of revenue rather than of subjecting to the local village government property having a natural connection with it and people residing thereon having a community of interest, the courts will not sustain it. (*Minnesota Supreme Court, State vs. Village of Buhl*, 184 Northwestern Reporter, 850.)

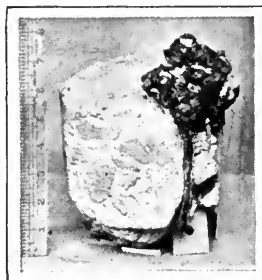
Servicised Expansion Joints



MONITORS OF THE ROAD

Old principles of expansion joint provide fillers of solid asphaltic content or impregnated fibre and asphalt in an elastic mass. ¶ The fundamental purpose of the filler is to re-occupy the space left by two contracting slabs. ¶ Solid asphaltic or impregnated fibrous materials contract, concrete slabs likewise contract on cooling. ¶ Three contracting bodies cannot occupy the same space as when expanded. Servicised Joints *expand* when the concrete slabs contract. ¶ This is the key to a permanent waterproof joint; a correct answer to the problem of expansion between two contracting bodies. Unimpregnated cellular fibrous matter in Servicised Joints brings about this re-expansion after compression is relieved.

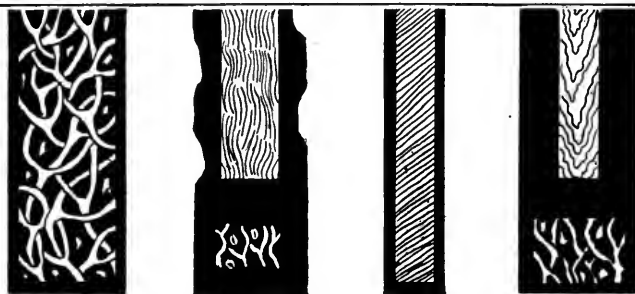
Trapped Under Compression: The print to the right is an example of oozing under compression. Due to the hard asphalt surfacing over the concrete base, the traffic could not carry the surplus away because it was locked in between the asphalt surfacing and base. The force was great enough, however, to form bulges in the hard asphalt surface.



A Bituminous and Impregnated Fibre or Elastic Mass: No better proof of indiscriminate oozing. No better illustration of the need of expansion joint of the proper kind. The action in this instance resembles that of paste in a tube being squeezed with one side open. Action of this kind causes tremendous waste, without resulting in good. Servicised Joints will prevent this.

Write Us About Your
Expansion Joint
Problems

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TYPE B
75% Bitumen
25% Cellular Fibre

TYPE D
Self-Expanding
Non-Raising

TYPE C
Felt Center-Coated
Sides-Sidewalk Joint

TYPE AA
3/16 Veneer Core

Four Types of Servicised Expansion Joints  in Which the Oozing Tendency Is Controlled

Servicise the Crevice and Save the Road



Non-Toll Bridge Being Built in Cooper County, Missouri

Principal Obstacles in the Way of Travel over National Old Trails Road Through Missouri Being Overcome

ONE of the principal obstacles to cross-country travel in Cooper and Howard Counties, Missouri, has been the necessity of crossing on ferries or toll bridges over the Missouri River. This is now being overcome through the construction of a steel span bridge which is being built at Boonville by Cooper County, Mo., and the Old Trails Bridge Company with Federal Aid. The bridge is now under construction and will consist of six steel spans with concrete road surfaces on five piers in the stream, each carried to solid rock. This bridge will be used by the State Highway Commission of Missouri for one or more of the primary roads which it is building at a cost of not less than \$29,000 per mile.

It is interesting that Boonville, at which point the bridge is being built, is practically the center of population of the state of Missouri and that an air line from St. Louis to Kansas City practically passes through Boonville, as do one from Macon, Mo., to Springfield, one from Hannibal to Nevada, and one from St. Joseph, Mo., to Jefferson City. The report of the engineer of the State Highway Department stated that the only economical and practical location for the St. Louis-to-Kansas City route is the straightest possible location along the center line of population, passing through or near St. Charles, Danville, Fulton, Columbia, Boonville, Sweet Springs and Kan-

sas City, with primary connections with Mexico, Jefferson City, Moberly, Sedalia, Marshall, Warrensburg and Higginsville. This location of the road is 15 miles shorter than any other that can be obtained, and the road serves more population than any other route that could be selected.

The structure built by the Old Trails Bridge Company and the county, includes the Boonville approach to the main river bridge and the Howard County approach. The Boonville approach consists of all work south of Pier No. 1 and includes a reinforced concrete trestle with one steel girder span, together with an abutment and embankment between concrete retaining walls. The main river bridge contains three through riveted truss spans each 419 feet long, three through riveted truss spans each 280 feet long, and seven piers supporting the spans. Six of these piers rest on bedrock, five of them being sunk by the pneumatic process and the sixth in an open cofferdam. The remaining pier is supported upon piles. All the piers are of concrete. The Howard County approach comprises an earth embankment with guard-fences. The bridge and approaches provide for highway traffic on a 20-foot roadway. The roadway is an asphaltic pavement on a concrete floor on the river spans and on the Boonville approach, and a mac-

"Accessibility"



Through these ample crank-case doors, all the main and connecting rod bearings may be adjusted or replaced. The entire piston assembly may be removed for wrist pin adjustment or piston ring replacement.

This indicates the general accessibility that prevails throughout BEST Tractors.

CHARLES A. CLARK, Chairman of the Board of Commissioners of Duval County, Florida, in a recent letter to the Jacksonville (Florida) dealer for BEST Tracklayer Tractors, states:

"The most important feature that every tractor should possess in order to be fair to both its Purchaser and Operator, is *accessibility* and simplicity of construction. I consider this to be one of the leading features of your 'BEST Tractor.' I have had the opportunity of inspecting quite a few of other makes of tractors, and feel that the 'BEST' is far ahead of anything now on the market."

Because working parts in BEST Tracklayer Tractors are *readily accessible*, necessary adjustments and minor repairs can be made right on the job without serious loss of time and at minimum expense, often effecting important savings.

City and County officials interested in economical power for public work are invited to write for facts and figures on the operation of BEST Tracklayer Tractors.

BEST Tractors are available in two sizes—the Sixty and the Thirty.

C. L. BEST TRACTOR CO.
SAN LEANDRO, CALIFORNIA

Distributing Warehouses

St. Louis, Mo.
818 North Second St.

Portland, Ore.
East Salmon & Water Sts.

223-13

BEST TRACTORS

When writing to Advertisers please mention THE AMERICAN CITY.

adam pavement on the Howard County embankment.

The cost of the bridge, with all the improvements which have been considered advisable to enable the bridge to pass into Federal control, is as follows:

| | |
|--|--------------------|
| Present contracted price of bridge..... | \$386,141.05 |
| Replacing trestle span 6 with steel span and adding pier 7..... | 21,417.65 |
| Crescoting floor planks and curbs..... | 8,400.00 |
| Metal pipe hand-rail to replace wood hand-rail..... | 8,964.00 |
| Addition for concrete floor paved with asphalt..... | 2,500.00 |
| Carrying pier 5 down to rock by pneumatic process..... | 25,085.50 |
| Field supervision and contingencies.... | 44,380.52 |
| | <hr/> \$496,888.72 |

In addition to this, there is the Howard County approach, also the Cooper County

approach, the cost of which has been cared for by a \$50,000 bond issue by the city of Boonville, carried by a vote of 1,292 for, and 88 against. The total expense for the bridge is taken care of as follows:

| | |
|---|------------------|
| Original bridge subscribers will donate.... | \$100,000 |
| Cooper County has voted bonds for..... | 125,000 |
| Franklin Township in Howard County has voted bonds for | 25,000 |
| State and Federal Aid already promised.. | 250,000 |
| Total | \$500,000 |

The vote of Cooper County for the \$125,000 bond issue gave a majority of three to one in favor of the issue, and on July 21 Franklin Township in Howard County almost unanimously voted its \$25,000 bond issue.

A Well-planned Fire Apparatus Inspection Blank

CITY OF LAKEWOOD

DIVISION OF FIRE

Eng. Co. No. **Monthly Inspection Report** Make
 N. & L. Co. No. of Model
 Misc. No.
 19.....

Herewith please find Report of Condition of Apparatus in Service at this Company for Month Ending 19.....

A Separate Form must be used for each separate car that comes into Quarters.

1. Is radiator full?
2. Is anti-freeze required?
3. Is fan belt tight?
4. Is water hose in good condition?
5. Are all water joints tight?
6. Does radiator leak? How badly?
7. Are crankcase to frame bolts tight?
8. Does carburetor flood or drip?
9. Is motor properly timed?
10. Are gasoline screens cleaned?
11. Does gasoline tank hold pressure?
12. Does vacuum tank work properly?
13. Does carburetor choke properly?
14. Is compression good?
15. Are valves properly adjusted?
16. Should valves be reground?
17. Has motor normal power?
18. Do rods or main bearings need taking up?
19. Is oil in crankcase up to level?
20. Should oil be changed?
21. Give date of last change of oil?
22. What is oil pressure, motor idling?
23. Is oil strainer clean?
24. Have transmission and rear axles sufficient oil?
25. Date last change.
26. Are magneto breaker points clean?
27. Are magneto points properly adjusted?
28. Is magneto distributor clean?
29. Are spark plug gaps adjusted at .025?
30. Does clutch pedal strike floor board?
31. Does clutch brake work properly?
32. Is clutch action smooth?
33. Does shifting lever work properly?
34. Does emergency brake work properly?
35. Do foot brakes work properly?
36. Do brakes need re-lining?
37. What is the condition of universal joints?
38. Are universal joints properly doped?
39. Are brake shafts and connections lubricated?
40. State condition of tires.
41. State condition of wheels.
42. State condition of body.
43. State condition of drive chains.
44. State condition of paint.
45. State condition of apparatus in regard to cleanliness.
46. State condition of speedometer.
47. Is steering gear working properly?
48. Are wheel bearings properly adjusted?
49. Do radius rods need adjusting?
50. Is torque arm tight?
51. Does starter work properly?
52. Has battery sufficient water?
53. Are battery connections clean?
54. Does switch work properly?
55. State condition of lighting system.
56. State condition of ignition system.
57. State condition of fire pumps.
58. State condition of suction.
59. State condition of gaskets.
60. State condition of gauges.
61. State condition of vacuum pump.
62. Does pump hold vacuum?
63. How much vacuum does pump pull?
64. Are drivers capable?

No. of alarms responded to. Miles traveled. Actual pumping service: Hours. Min.

Amount of gasoline and lubricating oil used since last report: Gas, gallons. Lub. oil, quarts.

Delays where apparatus was at fault: No. of. Time of delays.

Cause.

Apparatus out of service. Cause.

Explain under head of Remarks any condition needing attention.

Remarks

Signed

Driver or Engineer.
 Commanding Officer

THE number of cities almost entirely equipped with motor fire apparatus has increased tremendously in the last decade. Inasmuch as great dependence is placed on motor apparatus, which may not show its ills or weaknesses as quickly as the old fire horse, it is absolutely essential that some means of checking the care of the apparatus be devised.

In Lakewood, Ohio, the accompanying inspection blank has been devised and has to be turned in each month to the Fire Chief. On this report every part of the motor has a place for entry, which shows the exact condition of the machine and leaves room for any explanation and remarks. It would be well for many other cities to require such detailed reports in order to guard against any possible breakdowns of fire apparatus.

number 500

Each knot of the genuine African Bass fibre is deeply and firmly set in a clear, white elm block. The wide flare digs in close against the walls and curbs. The brush will not shed.

Those are the reasons why Osborn No. 500, by continued re-orders year after year from more than 500 cities, has proved itself unquestionably the most popular municipal push broom in the United States.

No. 500 is only one of many brushes and brooms for city use carried in stock for immediate delivery.

Write for Prices

THE OSBORN MFG. CO.
INCORPORATED

New York CLEVELAND Detroit
Chicago San Francisco



Excess of Families Over Dwellings

"DWELLINGS and Families" is the title of a special bulletin of the Bureau of the Census, embodying a summarization of the data on this subject which were collected for the 1920 Census.

A dwelling, for census purposes, is a place in which one or more persons regularly sleep. It need not be a house in the usual sense of the word, but may be a hotel, boarding-house, institution, or the like. A boat, a tent, a freight car, or a room in a factory, store, or office building, although occupied by only one person, is also counted as a dwelling, while, on the other hand, an entire apartment house, although containing many families, constitutes but one dwelling.

For the United States as a whole, a decrease in the average number of *persons* per dwelling has been shown at each census from 1850 to 1920 for which comparative figures are available. During the same period, however, as a result of the increased construction of apartment houses and tenements, the number of *families* per dwelling has increased from 1.07 to 1.18.

The excess of families over dwellings in the United States in 1920 was equal to 15 per cent of the total number of families. This, of course, does not mean that only 15 per cent of the total number of families were living on January 1, 1920, in plural-family dwellings. To illustrate: Suppose that 120 families were housed in 100 dwellings and that no more than two families occupied one dwelling. In this case 80 fami-

lies would occupy 80 dwellings and 40 families would occupy 20 dwellings, and the number of families living in dwellings housing more than one family each would be 40, or exactly twice the excess of families over dwellings. If, however, 98 families occupied 98 dwellings and each of the remaining 2 dwellings was occupied by 11 families, the number of families living in plural-family dwellings (22) would be only slightly greater than the excess of families over dwellings (20). The number of families living in plural-family dwellings is, therefore, somewhat more than the excess of families over dwellings.

The percentage of excess of families over dwellings in each city of 100,000 inhabitants or more is shown in the accompanying table. The average excess for these cities is 37.5 per cent of their total number of families.

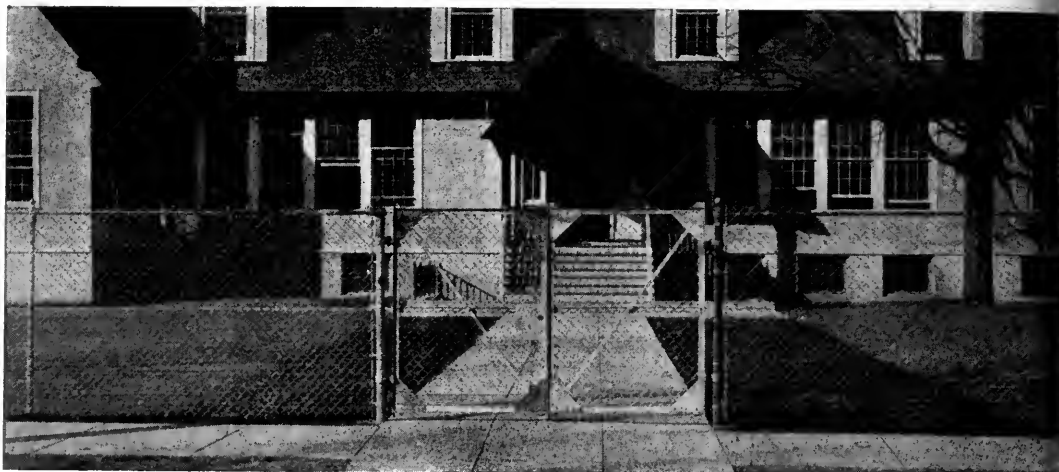
The term "family," as used in the census, signifies a group of persons, whether related by blood or not, who live together as one household, usually sharing the same table. One person living alone is counted as a family, and, on the other hand, all the occupants and employees of a hotel, boarding-house, or lodging-house, if that is their usual place of abode, and all inmates of an institution, however numerous, are treated as constituting a single family.

The number of persons to a family, like the number to a dwelling, has decreased from census to census since 1850, having been 5.6 in 1850 and 4.3 in 1920.

PERCENTAGE OF EXCESS OF NUMBER OF FAMILIES OVER NUMBER OF DWELLINGS

From the Federal Census of 1920

| City | Per Cent Excess | City | Per Cent Excess | City | Per Cent Excess | City | Per Cent Excess |
|------------------|-----------------|--------------------|-----------------|--------------------|-----------------|--------------------|-----------------|
| Akron | 27.5 | Fall River | 47.7 | New York..... | 71.4 | St. Louis | 38.0 |
| Albany | 34.5 | Fort Worth | 21.4 | Bronx Bor. | 79.6 | St. Paul | 22.0 |
| Atlanta | 23.1 | Grand Rapids.... | 13.5 | Brooklyn Bor. .. | 61.7 | Salt Lake City.... | 16.1 |
| Baltimore | 18.3 | Hartford | 46.5 | Manhattan Bor.. | 85.6 | San Antonio..... | 16.9 |
| Birmingham .. | 18.4 | Houston | 16.1 | Queens Bor..... | 41.3 | San Francisco.... | 26.9 |
| Boston | 51.7 | Indianapolis .. | 11.8 | Richmond Bor... | 23.2 | Scranton | 19.5 |
| Bridgeport | 30.2 | Jersey City | 53.7 | Newark | 55.5 | Seattle | 24.4 |
| Buffalo | 36.4 | Kansas City, Kans. | 9.5 | Norfolk | 25.4 | Spokane | 17.6 |
| Cambridge | 40.2 | Kansas City, Mo. | 25.3 | Oakland | 15.2 | Springfield | 37.6 |
| Camden | 6.5 | Los Angeles | 21.6 | Omaha | 14.6 | Syracuse | 30.9 |
| Chicago | 46.2 | Louisville | 21.6 | Paterson | 41.7 | Toledo | 14.6 |
| Cincinnati | 40.8 | Lowell | 30.1 | Philadelphia | 12.4 | Trenton | 11.6 |
| Cleveland | 36.2 | Memphis | 16.7 | Pittsburgh | 27.9 | Washington | 25.0 |
| Columbus | 12.3 | Milwaukee | 36.9 | Portland | 18.5 | Wilmington | 14.8 |
| Dallas | 16.0 | Minneapolis | 28.6 | Providence | 34.9 | Worcester | 50.7 |
| Dayton | 11.1 | Nashville | 17.3 | Reading | 9.7 | Yonkers | 53.4 |
| Denver | 18.2 | New Bedford.... | 44.3 | Richmond | 21.5 | Youngstown | 16.3 |
| Des Moines | 14.3 | New Haven | 37.8 | Rochester | 17.2 | | |
| Detroit | 30.0 | New Orleans..... | 9.6 | | | | |



Bancroft School, Worcester, Mass.

EXCELSIOR Chain Link Fence meets the exacting necessities for the school-house enclosure.

Because it is unclimbable it offers no temptation and accompanying accidents for the rising youth. Because it is galvanized *after* weaving it has rust proof qualities impossible in any other kind of steel fence. Its even, sturdy mesh construction harmonizes with the ideals of modern schoolhouse designs.

We shall be glad to submit estimates on fencing and gates in either chain link or our patent clamp construction, either in the fabric or erected.

WICKWIRE SPENCER STEEL CORPORATION

41 East Forty-second Street, New York

Worcester

Buffalo

Detroit

Chicago

San Francisco

It will interest you to know that —

Municipal Salaries Have Been Adjusted to Living Costs in St. Paul

St. Paul has put into effect a plan by which the salaries of its municipal employees are automatically adjustable to the rise and fall in the cost of living. Seventeen distinctive grades of service are established, excluding certain skilled and common labor employments, and positions are allocated to these various grades in accordance with the economic value of the services to the city, taking into consideration the importance, difficulty, and responsibility of the duties performed, the qualifications required, and so on.

In adjusting salaries to the cost of living, the year 1916 is used as a base. A scale of increases over the basic rate is fixed in the ordinance to apply to salaries of the various grades until July 1, 1923. Beginning next July and annually thereafter, the salary rates are to be adjusted in accordance with the changes in cost of living as shown by the index numbers prepared and published by the United States Bureau of Labor Statistics.

Pamphlets entitled "Rates of Compensation for City Positions" and "Civil Service Rules and Classification" will be sent to any reader of *THE AMERICAN CITY* on application to J. B. Probst, Chief Examiner, Civil Service Bureau, St. Paul, Minn.

Fifteen Million People Live in Zoned Cities

More than 15,000,000 people—27 per cent of the population of the United States—live in zoned cities, towns and villages, according to information made public by the Federal Department of Commerce. Up to the first of this year, 109 cities, towns and villages had been zoned, as compared with 55 at the beginning of 1922.

The Department's investigation shows that in 1922 zoning spread especially rapidly in smaller places. Fourteen towns with five to ten thousand inhabitants were zoned during the year, bringing the total zoned towns in this class to twenty-three. Twelve places with 5,000 inhabitants or less were added to the list in 1922, bringing the total in that class to 17. The percentage of large cities which have already zoned remains much

greater, of course, and of the fifty largest cities in the country, twenty-two have zoning ordinances in effect.

The complete list of zoned municipalities, as of January 1, 1923, with reference to the state acts under which zoning is permitted, may be obtained from the Division of Building and Housing of the Department of Commerce, which also has available for distribution such pamphlets as "A Zoning Primer," explaining in popular style the elements of zoning, and "A Standard State Zoning Enabling Act," a model act for the assistance of states in preparing laws permitting city zoning.

The Average American Might Live Ten Years Longer

We are still far from having attained the limit of the life-span under the conditions of our present knowledge of preventive medicine and sanitary science. At least ten years could be added to the prevailing expectation of life for the average person in the United States, if the death rates already attained in certain countries, and in certain parts of our country, were to apply generally to our whole population. This was the principal conclusion drawn by Doctor Dublin, Statistician of the Metropolitan Life Insurance Company, in an address delivered before the Harvey Society at the New York Academy of Medicine.

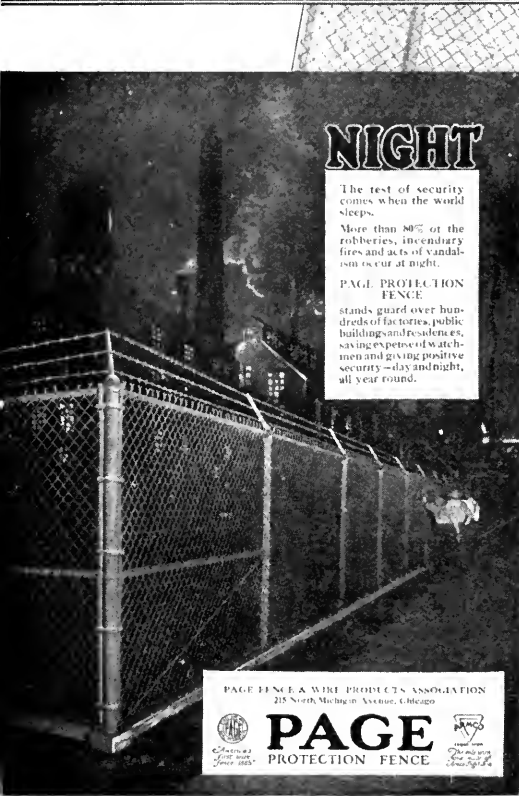
From the observed experience of many localities in recent years, the most favorable of the attained death rates were abstracted and a life table calculated along the following lines:

Hypothetical Life Table, Based Upon Mortality Rates Attainable Under Present Knowledge of Preventive Medicine and Public Health

| Age | Number Living in Specified Age Interval | Mortality Rate Per 1,000 | Expectation of Life |
|----------|---|--------------------------|---------------------|
| 0..... | 100,000 | 38.21 | 64.75 |
| 1..... | 96,179 | 10.00 | 66.30 |
| 2..... | 95,218 | 4.20 | 65.97 |
| 3..... | 94,818 | 2.80 | 65.24 |
| 4..... | 94,552 | 2.25 | 64.42 |
| 5..... | 94,339 | 1.85 | 63.57 |
| 10..... | 93,648 | 1.14 | 59.02 |
| 20..... | 92,260 | 2.34 | 49.82 |
| 30..... | 89,772 | 3.26 | 41.06 |
| 40..... | 86,318 | 4.70 | 32.49 |
| 50..... | 81,542 | 7.19 | 24.08 |
| 60..... | 73,882 | 14.29 | 16.01 |
| 70..... | 56,213 | 56.45 | 9.17 |
| 80..... | 22,818 | 130.28 | 5.29 |
| 90..... | 3,110 | 249.62 | 3.03 |
| 100..... | 67 | 401.91 | 1.85 |



PAGE PROTECTION FENCE - the only fence of ARMCO INGOT IRON



NIGHT

The test of security comes when the world sleeps.

More than 80% of the robberies, incendiary fires and acts of vandalism occur at night.

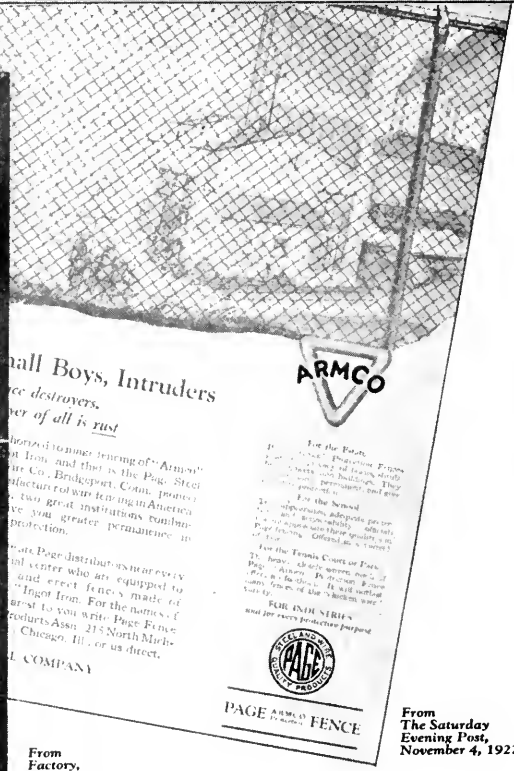
PAGE PROTECTION FENCE

stands guard over hundreds of factories, public buildings and residences, saving expense of watchmen and giving positive security—day and night, all year round.

PAGE FENCE & WIRE PRODUCTS ASSN.
215 North Michigan Ave., Chicago

PAGE

PROTECTION FENCE



Small Boys, Intruders
Fence destroyers,
Power of all is rust

Authorized American fencing of "Armco" Ingot Iron, and that is the Page Steel & Wire Co., Bridgeport, Conn., pioneer manufacturer of wire fencing in America. Two great institutions combine to give you greater permanence in protection.

Page distributes material every industrial center who are equipped to erect fences made of "Armco" Ingot Iron. For the names of agents to you write: Page Fence Products Assn. 215 North Michigan Ave., Chicago, Ill., or us direct.

COMPANY

For the Police
Page Fence & Wire Products Assn. has a special section of literature for police departments. They are free, permanent and give you the best of all.

For the School
Page Fence & Wire Products Assn. has a special section of literature for schools. They are free, permanent and give you the best of all.

For the Farm, Court or Fair
Page Fence & Wire Products Assn. has a special section of literature for farms, courts and fairs. They are free, permanent and give you the best of all.

FOR IND. SERIES
and for every protective purpose



PAGE ARMCO FENCE

From
The Saturday
Evening Post,
November 4, 1922

From
Factory,
November, 1922

HOW long your fence lasts depends upon whether it is merely a fence or a Page-Protection Fence made of rust-resisting "Armco" Ingot Iron. "Armco" Ingot Iron is commercially pure iron. It not only resists rust, but its smooth, even surface makes a close bond with the galvanizing, which will not crack or peel.

There is only one manufacturer authorized to make fencing of "Armco" Ingot Iron, and that is the

Page Steel & Wire Co., Bridgeport, Conn., pioneer manufacturer of wire fencing in America. Thus, two great institutions combine to give you greater permanence in fence protection.

There are Page erecting organizations near every industrial center, equipped to supply and erect fences of steel or "Armco" Ingot Iron.

For the name of the erecting organization nearest to you, and complete literature, write

PAGE FENCE & WIRE PRODUCTS ASSN.
215 North Michigan Ave., Chicago, Ill.

The Present City of New York Is Twenty-Five Years Old

Greater New York had its twenty-fifth birthday on January 1, 1923, the city as now constituted having come into being on January 1, 1898. Before that day the name of New York had been borne by the Island of Manhattan and part of The Bronx. The union of these with the city of Brooklyn, Queens County, Staten Island and a part of Westchester County brought together in the greater city a population of somewhat over 3,000,000. Now there are nearly 6,000,000 in the same area. During the 25 years the tax budget has grown from \$77,473,000 in 1898 to \$353,350,976 in 1922; and the assessed valuation from \$1,856,567.923 to \$10,249,995,630.

Denver Has Announced Its First List of Civic Benefactors

The Municipal Commission on Civic Benefactors of the city of Denver has announced a list of thirty citizens, some living, some dead, who by gifts of a national character have added to the beauty or distinction of the city. Their names will be inscribed upon the colonnade in the south end of the civic center. The Commission was appointed two years ago by Mayor Dewey C. Bailey, in carrying out the wish of the late Mayor Robert W. Speer, with whom the idea of honoring civic benefactors originated. Additional names will be given

recognition probably once a year by the Commission, whose work will never be completed while Denver lasts. The gifts to the city include paintings and sculpture, natural history groups and collections, gateways, fountains, parks, a college for orphans, an addition to the Colorado Natural History Museum, a stalactite cave, and special memorials.

The Home Ownership Percentage in the United States Is Decreasing

Out of over twenty-four million homes in the United States more than 54 per cent are rented homes, according to figures furnished the National Association of Real Estate Boards by the Federal Census Bureau. During the ten years from 1910 to 1920, the proportion of rented homes was on the increase, and, of the homes that were owned, a larger per cent were owned free and a smaller per cent were encumbered in 1910 than in 1920.

While the variation is not alarmingly large, it represents a tendency which has been manifesting itself slowly but surely for the past thirty years. The following table tells the story in brief:

| YEAR CENSUS | Homes Rented | Free —Homes Owned— | Encumbered |
|----------------|--------------|-----------------------|------------|
| 1920..... | 13,236,709 | 6,862,520 | 4,252,447 |
| 1910..... | 10,982,380 | 6,236,074 | 3,037,101 |
| 1900..... | 8,719,060 | 5,127,935 | 2,340,720 |
| 1890..... | 6,623,735 | 4,369,527 | 1,696,890 |

On the Calendar of Conventions

FEBRUARY 14-15.—INDIANAPOLIS, IND.

Indiana Sanitary and Water Supply Association. Annual meeting. Secretary, C. K. Calvert, 1902 North New Jersey Street, Indianapolis, Ind.

FEBRUARY 14-17.—TRENTON, N. J.

New Jersey State Highway Association. Annual convention. Secretary, Edward O'Brien, State Highway Department, Trenton, N. J.

FEBRUARY 14-16.—LAFAYETTE, IND.

Indiana State City Planning Conference. Address: Director of Engineering Extension, Purdue University, Lafayette, Ind.

FEBRUARY 16-17.—UTICA, N. Y.

Conference of Commercial Organization Secretaries of the State of New York. Annual conference. Address: John G. Duffy, Secretary, Chamber of Commerce, Utica, N. Y.

FEBRUARY 19-20.—CLEVELAND, OHIO.

National Highway Traffic Association. Annual convention. Secretary, Elmer Thompson, 247 West 54th Street, New York, N. Y.

FEBRUARY 19-20.—CLARKSBURG, W. VA.

West Virginia Association of Commercial Organization Secretaries. Annual convention. Secretary-Treasurer, William Kennedy, Parkersburg, W. Va.

FEBRUARY 25-MARCH 1.—CLEVELAND, OHIO.

National Education Association, Department of

Superintendence. Annual meeting. Secretary, Dr. S. D. Shankland, Andrews Institute for Girls, Willsoughby, Ohio.

FEBRUARY 28-MARCH 2.—TORONTO, ONT.

Ontario Good Roads Association. Annual convention. Secretary, George S. Henry, R. R. 1, Todmorden, Ont.

MARCH 12-14.—EVANSVILLE, IND.

Indiana Society of Sanitary Engineers. Annual convention. Secretary, Emil Hartig, 1026 West Franklin Street, Evansville, Ind.

MAY 7-9.—NORFOLK, VA.

American Association of Engineers. Annual convention. Secretary, C. E. Drayer, 63 East Adams Street, Chicago, Ill.

MAY 21-25.—DETROIT, MICH.

American Water Works Association. Annual convention. Secretary, J. M. Diven, 153 West 71st Street, New York, N. Y.

JUNE 4-8.—NEW YORK, N. Y.

National Electric Light Association. Annual convention. Executive Manager, M. H. Aylesworth, 29 West 30th Street, New York, N. Y.

NOVEMBER 12-16.—MEMPHIS, TENN.

American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box 234, St. Petersburg, Fla.

Make Your Lawns the Pride of Your City

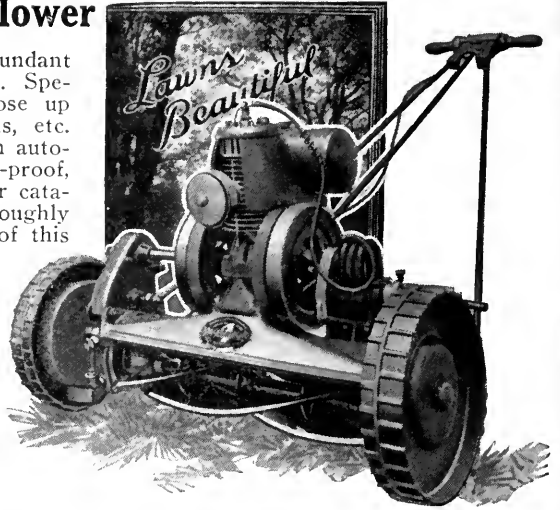
You can do it and save money. The "4-Acre" Power Lawn Mower does the work of four or five men with hand mowers, cutting four to five acres a day at a fuel cost of less than 40c a day. Adopted by leading park superintendents as standard equipment. Unsurpassed for use in small parks, boulevards, and places inaccessible to gang mowers.

A "4-Acre" Power Lawn Mower

quickly pays for itself in labor saved. Abundant power for hilly ground and tough spots. Specially designed to handle easily in close up work around trees, shrubs, flower beds, etc. Built with the mechanical accuracy of an automobile, yet sturdy as a tractor. Trouble-proof, strong and simple to operate. Write for catalogue. "Lawns Beautiful," which thoroughly describes superior mechanical features of this wonderful mower. Also ask for special literature on our Power Putting Green Mower for your municipal golf course.

Write for Free Beautiful Book Today.

Jacobsen Manufacturing Co.
Dept. E., Racine, Wis., U. S. A.



HOW many cutting units have been wrecked in mowing your fairways? Learn this from your grounds keeper and you will appreciate the value of Ideal "Bulldog" cutting units that sturdily endure month after month of rough, hard use. Made extra-heavy, of special steels and with Timken bearings they are free from breakage and retain their adjustments longer than any cutting units made. The strongest argument in favor of the Ideal Triplex Mower is the experience of others. "The fastest, most durable mower we have ever used" is the verdict of scores of noted clubs.

Proof of its superiority will be sent on request.

Ideal Power Lawn Mower Company

R. E. Olds, Chairman

400 Kalamazoo Street, Lansing, Michigan
New York, 13-19 Hudson St.
Chicago, 11 East Harrison St.

Dealers in all Principal Cities

(22)

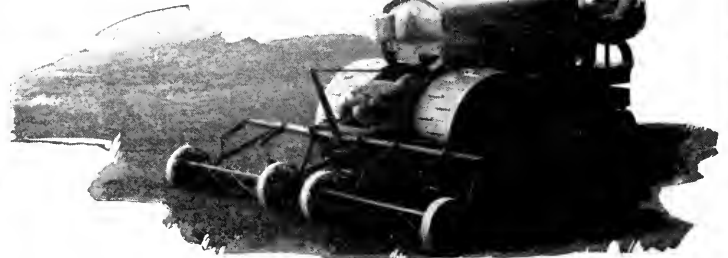


Turns in Own Length Forward Or Backward

Cutters can be raised or lowered by the operator without leaving his seat or stopping the mower.



Raising Cutters from Seat for Crossing Walks or Driveways



Paragraphs Worth Quoting

Long-Distance Thinking

The great lesson we can learn from European cities is the wisdom of thinking in terms of generations, rather than in terms of months and years, in the planning of a city. Almost every civic undertaking of consequence takes many years in accomplishment.—J. C. NICHOLS.

The Fourth "R" for Public Schools

It has been suggested that a fourth "R" be added to the "R's" taught in public schools, namely, "Respect for the Law." Parents and city officials should give every assistance possible to teachers in teaching this subject, for, as a Kansas editor has said, the uninformed are several laps ahead of the misinformed on the road to civilization.—*Kansas Municipalities*.

When Two Roads Cross

In the United States we are apt to think only of the planning of communities already in existence, and in practice we rarely attempt to guide their growth until they have already attained a considerable size. This is a grave mistake. For good or for ill, as soon as two roads of a given width cross at a given place and angle, and a building starts at the intersection, important features of the future community, its life and growth, have been carelessly, perhaps, but in all probability irrevocably fixed.—From "The Law of City Planning and Zoning," by FRANK BACKUS WILLIAMS.

Revenue from Traffic Policeman

A traffic policeman probably costs nothing to the city in the collective sense; in fact, I imagine he will be found to be a source of revenue. He not only prevents accidents, saving to the community the economic value of those who would have been injured and killed, but he speeds up expensive traffic, greatly lessening the average time between receiving and delivery points, and thereby greatly lessening costs. That the saving is not visible, does not mean that it is not real. In this, there is not only a direct money value, but there is the increased efficiency with which the industrial and commercial activities of the city are conducted.—ARTHUR WILLIAMS.

Relation of Land to Life

Land without population is a wilderness, and population without land is a mob. The United States has many social, political, and economic questions—some old, some new—to settle in the near future, but none so fundamental as the true relation of the land to the national life.—JAMES J. HILL.

Elevating the Conception of Citizenship

If people learn to love their country, if their vision is raised beyond the petty circle of their personal and family interests to appreciate the true width and splendors of national life as a thing which not only embraces all of us who are now living here and grouped in a great body seeking common ends, but reaches back into the immemorial past and forward into the mysterious future, it elevates the conception of citizenship, it fills the sheath of empty words with a keen-edged sword, it helps men to rise above mere party views and to feel their exercise of voting power to be a solemn trust.—JAMES BRYCE.

Education the Foundation of Democracy

George Washington said: "In proportion as the structure of a government gives force to public opinion, it is essential that public opinion should be enlightened."

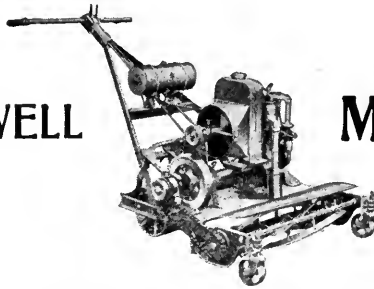
John Jay, the first Chief Justice of the United States, said: "As the weak and the wicked are generally in alliance, as much care should be taken to diminish the number of the former as of the latter. Education is the way to do this."

James Madison said: "A popular government without popular information or the means of acquiring it, is but a prologue to a farce or a tragedy."

John Adams said: "Laws for the liberal education of youth, especially of the lower classes of people, are so extremely wise and useful, that . . . no expense for this purpose would be thought extravagant."

Abraham Lincoln said: "I hope I may live to see the day when an unfettered start and a fair chance in the race of life is guaranteed to every American boy and girl."

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Municipal and Civic Publications

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The Law of City Planning and Zoning.—By Frank Backus Williams, A.M., LL.B., of the New York Bar. The Macmillan Company, New York. 1922. In the Citizen's Library of Economics, Politics and Sociology, edited by Richard T. Ely, Professor of Economics in the University of Wisconsin. XVII + 738 pp. \$5.00.

The law relating to city planning matters is here presented comprehensively, logically, analytically, in such a way as to illuminate the whole procedure of attaining unity in the physical development of communities. As there can be no action toward this end without legislative authority, it is essential that every one who works along this line of progress should know the means by which city plans may be made, carried out, and paid for. The book is therefore of great value not only for reference by members of the bar to the relevant statutes and cases here collected, but also for the use of city officials, engineers, architects, builders, realtors, and other active citizens. It coordinates the principles and features of city planning with reference to the development of the city as a whole, to public streets, parks, and utilities, to private land and buildings, to the devising of methods of financing public construction, to the promotion of beauty, and to the administration of city planning law. The bibliography and the careful and exhaustive index with cross-references aid in making this an effective tool for planners and builders of cities.

The Planning of the Modern City.—A Review of the Principles Governing City Planning. By Nelson P. Lewis, former Chief Engineer of the Board of Estimate and Apportionment of New York City with the assistance of Harold M. Lewis. Second edition, revised. John Wiley & Sons, Inc., New York. XVII + 457 pp. Many views, diagrams and plans. \$5.00.

This new edition presents the standard principles of city planning theory and practise, and records as many as possible of the important city planning accomplishments up to the present time. The material on zoning has been expanded to adequately cover the development of this principle, and the chapter on "Progress and Methods" covers the present tendency to consider larger city planning units and to do regional planning. A few of the illustrations in the first edition have been replaced by better or more timely ones, and the index has been enlarged and improved.

National Conference on City Planning.—Proceedings of the Fourteenth National Conference on City Planning, Springfield, Mass., June 5-7, 1922. 214 pp. Illustrated. Apply to Flavel Shurtleff, Secretary of the Conference, 130 East 22nd Street, New York, N. Y. \$2.25.

Including the following papers: "Parks and Playgrounds," by Henry V. Hubbard; "The School Building Program an Important Part of the City Plan," by Dr. George D. Strayer; "The Treatment of the River Front," by Colonel Stanhope E. Blunt; "The Design of the Street System in Relation to Vehicular Traffic," by Ernest P. Goodrich; "The Fundamentals of Transit Planning for Cities," by Daniel L. Turner; "The Place of the Beautiful in the City Plan," by John Nolen; "The Value of Art Commissions in City Planning," by Andrew Wright Crawford; "Methods of Winning Public Support for a City Planning Program," by Dr. Samuel B. Woodward; "Better Homes with More Profit," by Lawson Purdy; "The Buffalo City Plan," by C. J. Hamlin. Containing also a list of cities that have shown an interest in city planning, by making city planning studies or appointing city planning or zoning boards.

A Standard State Zoning Enabling Act Under Which Municipalities May Adopt Zoning Regulations.—Revised edition, January, 1923. 16 mimeographed pp. (Apply to the Department of Commerce, Washington, D. C.)

Motor Vehicle Transportation.—By Henry C. Spurr, Editor of Public Utilities Reports. Public Utilities Reports, Inc., Rochester, N. Y. 1922. 696 pp. \$6.00.

A very much worth-while volume which has been prepared to bring together in convenient form the various rules, regulations, policies and practises affecting motor vehicle transportation in the United States. The rapid development of the automobile as a public transportation agency and its entrance as a competitor in the field of public service give rise to problems which interest all other transportation agencies and a large group of industries and individuals directly or collaterally affected, as well as the public in general. The book takes up the contemporary development of the existing theory of public supervision, and gives a classified review of general rules, regulations and legislation governing rates, operation and service in many states. It also gives state commission rulings and policies as expounded and applied in actual controversy. Municipal officials studying the problem of motor vehicle transportation and regulation will find much of value in this volume.

Brown's Directory of American Gas Companies and Gas Engineering and Appliance Catalog for 1922.—C. E. Reese, Editor, Robbins Publishing Company, Inc., New York. 1922. 966 tpp. \$10.00 to individuals; \$7.50 to gas companies.

A catalog of catalogs in the gas engineering industry, bringing into a single volume compactly and logically assembled and cross-indexed manufacturers' catalogs for the benefit of gas companies and officials. It contains a classified index of products, printed on tinted paper, lists the manufacturers of all articles mentioned, arranges the products in alphabetical order, and gives the names of firms that can supply each article. There is also an alphabetical index of all manufacturers whose products are listed.

Depreciation of Public Utility Properties.—By Henry Earle Riggs, A.B., C.E., Professor of Civil Engineering, University of Michigan. McGraw-Hill Book Company, Inc., New York. 1922. IX + 211 pp. \$2.00.

The relation of depreciation to fair value and changes in the level of prices. The book sets forth the author's views and conclusions gained in an experience of many years in work on both sides of the question and in various phases of controversy. An attempt to find the middle ground of fairness and justice. Various legal decisions dealing with the subject of depreciation are given in chronological order and at some length, showing the drift of legal opinion with which those engaged in valuation work should be familiar.

Digest of City Manager Charters.—By Robert T. Crane, LL.B., Ph.D., Director of the Bureau of Government, University of Michigan. National Municipal League, 261 Broadway, New York. \$5.00.

A loose-leaf collection of digests of 167 city manager charters now in operation in American cities. New digests can be added from time to time as additional cities adopt this form of government. For use by commissions and committees for drawing and revising charters, by libraries, by civic organizations, and all students of the city manager plan. A pamphlet copy of the Model City Charter is included.

Plans and Illustrations of Prisons and Reformatories.—Collected by Hastings H. Hart, LL.D., President of American Prison Association. Russell Sage Foundation, New York. 1922. Quarto. 62 pp. \$2.50.

Presented at the Fifty-second Congress of the American Prison Association, Detroit, October, 1922. Descriptive text accompanies the illustrations, making plain the objects which the various plans are designed to attain in establishing new prison conditions.

The Social Trend.—By Edward Alsworth Ross, Ph.D., LL.D., Professor of Sociology in the University of Wisconsin. The Century Co., New York. 1922. 235 pp. \$1.75.



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PERFORMANCE COUNTS

Social Work.—Proceedings of the National Conference of Social Work at the Forty-ninth Annual Session held in Providence, R. I., June 22-29, 1922. Published by The University of Chicago Press, Chicago, Ill. VI + 522 pp. \$3.00.

The Settlement Horizon—A National Estimate.—By Robert A. Woods and Albert J. Kennedy. Russell Sage Foundation, New York, 1922. VI + 499 pp. \$3.00.

A broad study of the history, the aims, the experience, and the influence of settlements, based on personal visits and conferences and on a large supply of private and published information. "Settlement work, though predominantly localized, covers a range of active interests as wide as civilization, all of them in course of development." The appendix gives a variety of practical information on principles and methods of administration and activity.

What Every Citizen Should Know.—By George E. Dunham. Ginn and Company, Boston, Mass. VIII + 76 pp. 1 illustration. 75 cents.

Questions and answers on the Federal Constitution and laws and on the municipal and state laws of New York. Introduction by John H. Finley. Covering the town, the village, the city, the county, the state, the Federal Government, primaries and elections, and certain important questions on American history. Including also the Constitution and definitions of uncommon words used in it. A clear and straightforward aid to the understanding of citizenship.

Organizing the Community.—By B. A. McClenahan, M.A., Assistant Director, Missouri School of Social Economy, St. Louis. Edited by George B. Mangold, Director, Missouri School of Social Economy. The Century Co., New York, 1922. XV + 260 pp. Diagrams. \$1.75 postpaid.

A definite presentation of the principles and methods of helping communities to help themselves, based on actual work in many fields of social service. A book for students and for practical workers. A thorough working manual.

Community Chests—Their Advantages and Dangers.—By Harvey Leebron. 32 pp. Diagram. Addresses delivered at Stanford University Summer School of Community Leadership, 1921, at the 1922 California State Conference of Social Work, and in various Community Chest campaigns. This has been found useful in a number of communities, both for preliminary organization and for the conduct of the campaigns. Free to those interested; in quantities less than 1,000, 10 cents per copy; 5 cents per copy if more than 1,000 are ordered. (Apply to Harvey Leebron, Executive Secretary, The San José Community Council, Chamber of Commerce Building, San José, Calif.)

Central Financing of Social Agencies.—By W. Frank Persons. A report to the Columbia Advisory Council, Columbus, Ohio, August, 1922. 284 pp. Based upon an inquiry into the principles and methods of organization and operation of the central financing of social agencies in Cleveland, Cincinnati, Detroit, Rochester, Philadelphia, and Louisville, and upon the discussion of the matter in Pittsburgh. Price \$2.00. (Apply to Columbus Advisory Council, 16 South Third Street, Columbus, Ohio.)

The Cleveland Hospital and Health Survey Two Years After.—Answering questions about the need, value and results of the Hospital and Health Survey which was begun in Cleveland in November, 1919, and was recorded in an extensive report published in December, 1920. 70 pp. This summary was published in 1922 by the Cleveland Hospital Council, Cleveland, Ohio. (Apply to publishers.)

A Service Station in Americanization—The Citizens' Bureau of Cleveland.—Giving full information about this Bureau, which "exists primarily to help the foreign-born residents of Cleveland and Cuyahoga County to become American citizens in law and in fact." 32 pp. Illustrated. (Apply to the Citizens' Bureau, Old Court House, Public Square, Cleveland, Ohio.)

The Historical Pageant in the Rural Community.—By Abigail Fithian Halsey. Cornell Extension Bulletin 54, published June, 1922, by the New York State College of Agriculture at Cornell University, Ithaca, N. Y. 24 pp. Many illustrations. A most interesting explanation of the way to prepare and give a pageant in the country, made vivid by views and descriptions of rural pageants that have been successfully given. (Apply to A. R. Mann, Director of Extension Service, Cornell University, Ithaca, N. Y.)

Tablettes Documentaires Municipales.—An analytical bibliography, in several languages, of studies and information relative to municipal questions. Mimeographed sheets enclosed in covers under the following divisions: a bibliography of periodicals on municipal affairs; town and city planning; housing; water-supply, sewerage, and waste disposal; light, heat and power. Published from time to time by Union Internationale des Villes, rue de la Régence, a bis, Brussels, Belgium. (Apply to publishers.)

Replanning Fall River, Mass.—An elaborate presentation of the need and possibilities of city planning in Fall River as a measure of public economy and efficiency. 20 x 16 inches. 1922. Covering the report of the Planning Board to Mayor Kay on the first, second and third years of service; the report of Arthur A. Shurtleff, town planner, giving both a survey of the problems involved and their solution without reference to technical data, and a second portion of technical matter; tentative draft of a proposed zoning ordinance and plan, by John P. Fox, consultant on zoning; "Legal Aspects of City Planning," by Flavel Shurtleff, member of the Bar; and "Comments on Civic Center," by Harry J. Carlson, architect. 43 pp. Many maps, plans and views. (Apply to Nathan Durfee, Chairman, Planning Board, Fall River, Mass.)

Efficiency of Various Kinds of Ventilating Ducts.—By C. E. A. Winslow, Senior Sanitarian, United States Public Health Service, and Leonard Greenburg, Assistant Sanitary Engineer, United States Public Health Service. Reprint No. 773 from the Public Health Reports, July 28, 1922. A study of the uniformity of air distribution attained with ventilating ducts of various designs. 12 pp. Diagram and tables. (Apply to the Government Printing Office.)

The Reasons for Municipal Ownership.—By Delos F. Wilcox, Ph.D. From an address before the City Managers' Association at its Eighth Annual Convention, at Kansas City, Mo., November 16, 1922. 16 pp. Published December, 1922. (Apply to author at 436 Crescent Street, Grand Rapids, Mich., or 110 West 40th Street, New York, N. Y.)

Weights and Measures.—Fifteenth Annual Conference of representatives from various states, held at the Bureau of Standards, Washington, D. C., May 23-26, 1922. Miscellaneous Publications No. 51 of the Bureau of Standards. XV + 132 pp. Price 15 cents. (Sold only by the Superintendent of Documents, Government Printing Office, Washington, D. C.)

Sewerage in New Jersey—Report on Methods of Providing Additional Sewerage Facilities for Certain Municipalities in Essex and Union Counties, New Jersey.—Prepared for the Joint Meeting by Alexander Potter, consulting engineer, 50 Church Street, New York, N. Y. 1922. V + 153 pp. Maps and diagrams. (Apply to author, 50 Church Street, New York, N. Y.)

The American Civic Association's Park Primer.—A 4-page leaflet defining in an interesting way a national park, a national monument, a state park, an interstate park, a regional park, a city park, a city playground, and a municipal camp. Price 2 cents. (Apply to the American Civic Association, 905 Union Trust Building, Washington, D. C.)

Gains Against the Nuisances: II. Noise and Public Health.—By Willis O. Nance, M.D., Trustee, Sanitary District of Chicago. A paper read at the meeting of the American Civic Association, Chicago, November 15, 1921. Reprinted from *National Municipal Review*, October, 1922. 8 pp. "Most noise is preventable. City noises shorten our lives, besides making them less worth living." (Apply to the American Civic Association, 905 Union Trust Building, Washington, D. C.)

Milk and Our School Children.—By Bernice C. Reaney, Associate Professor of Home Economics, University of Tennessee. Prepared for the Bureau of Education by the Child Health Organization of America. 1922. 32 pp. Under the heads, "How Many School Children Drink Milk?" "Why School Boys and Girls Need Milk," and "Milk Facts Made Real," the problem of interesting children in drinking milk is entertainingly handled. The actual steps by which one teacher in Grade III in a school in Nashville, Tenn., solved this problem are presented, and the pamphlet is entertainingly illustrated with reproductions of posters made by the children in this grade. (Apply to the Government Printing Office, Washington, D. C.)



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Wire fabric fencing, properly made, is an ideal protective material. Used as an exterior fencing about parks, playgrounds, schools and other municipal properties, it is practically unclimbable. It is proof alike against the petty thief or the more sinister marauder. Statisticians have calculated that the annual loss from theft in exposed plants, estates, and public buildings will aggregate half a billion dollars a year.

It has been found that this wire link fabric, made by the Page Fence and Wire Products Association, 215 North Michigan Ave., Chicago, Ill., also furnishes an ideal partition where it is used in public buildings or schools. Any portion of the floor space may be effectually segregated without the slightest obstruction to light, air, or the general oversight of the entire area. The fencing is vermin- and fire-proof and practically indestructible. The fencing is made in any mesh from $\frac{1}{2}$ -inch to 2 inches and in any size of wire from No. 6 to No. 14 inclusive. Probably the most satisfactory weave for nearly all ordinary purposes is a combination of 2-inch mesh from No. 9 or No. 6 wire. Because of the simplicity and neatness of the style O-TR, illustrated below, this is favored for parks, public institutions

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A New 3-Ton Motor Road Roller for Diverse Uses

To make it possible for cities and contractors to build more economical concrete roads, the Austin-Western Road Machinery Company, 400 North Michigan Boulevard, Chicago, Ill., is now selling the Austin "Pup," a 3-ton power roller which was brought into existence by the specifications for concrete roads built under the direction of the Illinois State Highway Department. These specifications call for a 3-ton power roller and heretofore there has been nothing of such light weight obtainable except the old-style 3-ton tandem type of roller, which could be used only in a limited way and cost nearly as much as a full-sized roller. This machine is the first 3-wheel power roller weighing less than 7 tons that has been built by this



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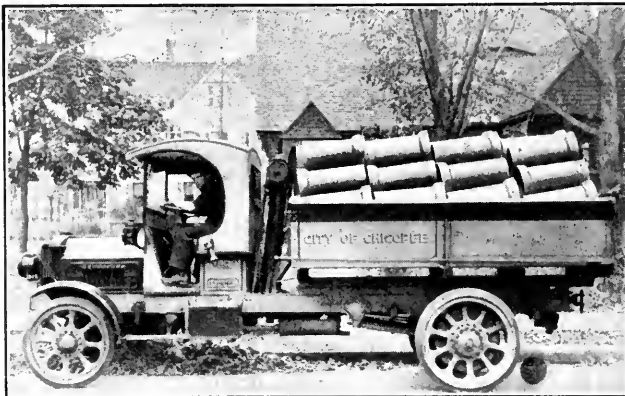
First it must be designed as a whole by experienced engineers according to modern truck practice.

Then, each individual unit must be correctly designed and built. Federal's plan of using specialized units, each made according to Federal specifications by the leader in its particular field, assures Federal owners of the best at lowest possible unit cost.

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company and it has already shown that it is a valuable machine for any city or contractor. In addition to preparing the subgrade by bringing it to a true surface and saving all unnecessary outlay of concrete that would otherwise go to fill depressions in the road, it can be used as a light tractor, as it has ample power to pull a 3-wheeled or drag scraper or fresno or a small road machine or plow. It will do practically everything that a small tractor will do, and at the same time it serves as a very complete and practical road roller.

There are many uses for the machine besides those mentioned above. Gravel and stone roads are frequently built or repaired by simply dumping the new material on the old surface and expecting traffic to wear it in, a wasteful and extremely inefficient method. By using this light-weight machine, the material can be readily compacted, making a much better road than by the old method. Dirt roads can also be rolled to very good advantage, especially after the spring grading or the dragging that follows a rainfall. Parks and cemeteries will find this machine a very handy one for rolling drives and walks, particularly those that are too winding or narrow to accommodate a standard roller.

The machine runs $1\frac{1}{2}$ miles per hour in low, about $2\frac{3}{4}$ miles in high, and slightly over $2\frac{1}{2}$ miles in reverse. It combines the power-plant of a Fordson tractor with the features of the Austin gas roller, which makes it possible to sell the machine at quite a low price.

Gas Street Lighting Installations

Approximately 10,000 Welsbach gas street lights have recently been installed in Cleveland, Ohio, and additional Welsbach street gas lights have been installed in East Orange, South Orange, Camden, Palmyra, Gloucester Township, Passaic, Riverton, Montclair and Totowa, N. J.; Boston, Lowell and Haverhill, Mass.; St. Louis, Mo.; Mount Vernon, Silver Lake Park, Kenmore, Sea Gate and Pelham Manor, N. Y.; Augurville, Centerville and Hamden, Conn.; Brookfield, Ill.; Indianapolis, Ind.; Cleveland, Ohio; Portland, Maine; Oakland,

Calif.; Washington, D. C.; Baltimore, Md., and Pittsburgh, Pa.

Gas street lighting contracts have been renewed in New Bedford, Mass., for one year; Brookfield, Ill., for ten years; Arlington Heights, Ill., five years; Haverhill, Mass., five years; and Mt. Oliver, Pa.

New Philadelphia Office for Fuller & McClintock

Fuller & McClintock, 170 Broadway, New York City, have announced the opening of a branch office at 1001 Chestnut Street, Philadelphia, Pa. The Philadelphia representative will be C. A. Emerson, who for the past nine years has been Chief Engineer of the State Department of Health of Pennsylvania. Previously to his work in Pennsylvania he was connected with the construction

of the water filtration and softening plant at Columbus, Ohio, the preliminary studies, design and construction of the Baltimore sewage treatment work, and other projects.

Fuller & McClintock now have branch offices in Toledo, Ohio, Memphis, Tenn., and Kansas City, Mo., as well as Philadelphia, Pa.

Changes in American-LaFrance Staff

Recent changes have been announced in the selling force of the American-LaFrance Fire Engine Company, Inc., Elmira, N. Y. A. M. Donaher, who has been in charge of apparatus sales for Ohio, has been made manager of the California apparatus sales, with headquarters at San Francisco. Associated with him is V. H. Brown, former California manager of sundry sales, and George H. Herald. Howard M. Karr, who formerly was salesman for the sundry sales department in western New York, has been made branch manager in San Francisco, to succeed Mr. Brown. R. C. Engels, formerly sundry sales branch manager in the New York City office, has taken over Mr. Donaher's territory in Ohio. In Boston, Harry Lovell, former sundry sales manager of the branch in that city, goes on the apparatus sales staff with Joseph A. Webber, and A. H. Kohnen, formerly with the Chicago branch, takes Mr. Lovell's place. Robert Henrich has been transferred from Boston to Elmira. J. J. Egan has been promoted to manager of the sundry sales department branch in New York City.

Planning Greater Norfolk

The City Planning Commission of Norfolk has engaged the Technical Advisory Corporation, 132 Nassau Street, New York City, as consulting engineers for the formulation of plans for a greater Norfolk. Among the first problems encountered are the selection of a site for the new municipal auditorium and the framing of a zoning plan. It is expected that the entire plan will be completed by January 1, 1924.

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CHICAGO'S NEW "STOP" SIGN
FOR CROSS-STREETS

Street Traffic Control

During the last year the matter of traffic regulation has been drawn to the attention of various municipal officials more forcibly than ever, not only in the larger cities but in many smaller towns. Chicago has experienced considerable trouble in regulating the movement of traffic, because of the vast extent of the city as well as the congested condition of the streets and boulevards. The problem has been practically solved, however, and automobilists given additional reason for a feeling of safety from the standpoint of right of way over other traffic, by reason of the designation of six more streets upon which "boulevard rules" will apply. These rules require that all vehicles entering from cross-streets shall stop before entering or crossing the boulevard.

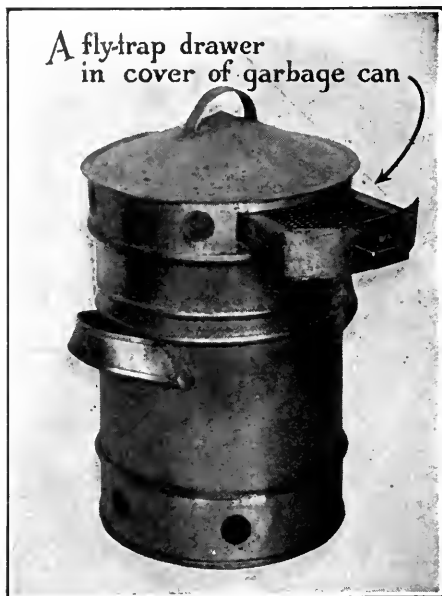
All the latest streets to come under this rule are on the south side of Chicago and bring the total number of such thoroughfares, including those previously designated on the north side, up to seventeen, and it is expected that several west side streets will be added very soon. The contract for over 1,000 "Stop" signs for designating the through streets at all crossings was awarded to the Union Iron Products Company, East Chicago, Ind. The design was worked out with the assistance of Charles R. Francis, Commissioner of Public Works, and William Burkhardt, Deputy Commissioner. The sign is of heavy-gage steel, shield-shaped, approximately 15 x 20 inches in size. All of the lettering is of countersunk construction and finished in the best grade ground aluminum paint. The upper half of the sign has a black background and 2-inch letters reading "Through Street," and the lower half has a blood-red background with 5-inch letters reading "Stop." The sign is finished with elastic baking enamel, baked on at high

temperature for a sufficient length of time to insure durability.

This company has for a number of years been manufacturing a complete line of highway markers, semaphore outfits, "No Parking" signs and warning signals. The improved brass name plate which it is making has been adopted as standard equipment in many cities, among which are Dubuque, Iowa, Centerville, Iowa, Parkersburg, W. Va., Pontiac, Mich., San Antonio, Texas, Waupun, Wis., Onarga, Ill., Indiana Harbor, Ind., Indianapolis, Ind., Struthers, Ohio, East Youngstown, Ohio, and Findlay, Ohio.

Combining Fly-Traps with Garbage Cans

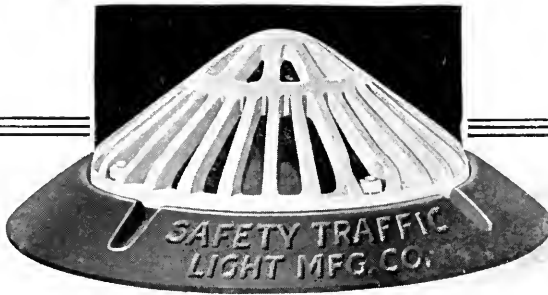
Within the last year T. H. Benton, Rialto Building, San Francisco, Calif., has brought out a fly-trap which is claimed to effect a considerable improvement in sanitary conditions where it is used. Ingress to the trap, which is mounted on a garbage can, is through a small hole leading to a drawer in which the bait, such as a pinch of sugar, is placed. The drawer also facilitates the removal of dead flies. It is impossible for the flies to escape after entering the trap, because of its construction. It has been successful in catching not only house and stable flies, but ants as well. A number of cities and towns in California are considering passing laws requiring its use around dwellings, markets and other public places where flies are likely to gather.



GARBAGE CAN EQUIPPED WITH FLY-TRAP

New Address for S. A. Arnold

Sheffield A. Arnold, landscape architect, formerly at 50 Bromfield Street, Boston, Mass., has moved to 230 Boylston Street, in the same city.



No Legal Liability

Can accidents be caused by traffic lights?

Is the city liable under the law?

If lamps burn out—if electric current is shut off—if the light is obscured by rain or snow—what's to hinder accidents?

Why not a car jolted from its course, and a smash into other cars—into curb, or worse?

Can a judgment for damages be secured against the city?

Write us now for catalog and prices—and still better, let us furnish a sample for test.

Just ask your city attorney. Just ask him about grounds for action for damages for negligence and for maintaining a public nuisance.

There's one safe light—the light with the Disappearing Dome.

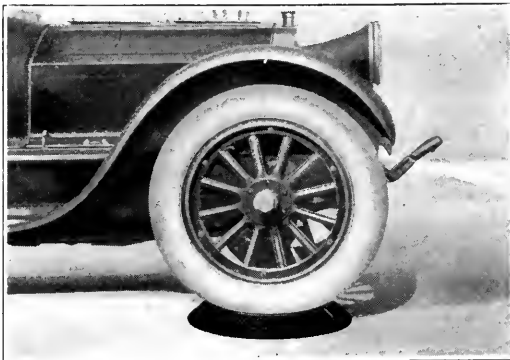
Does its full duty as a traffic guide—but will never injure, or kill anyone, or involve your city in law suits.

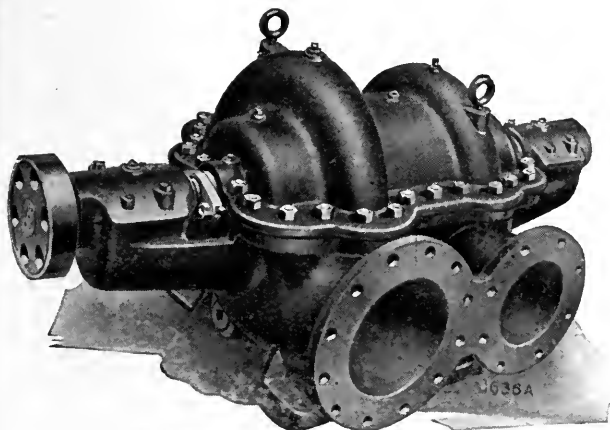
If inadvertently hit, it yields—let's a car pass over with no damage to car or light. Public opinion is *with* this light.

SAFETY TRAFFIC LIGHT MANUFACTURING COMPANY

425 East Water Street

Milwaukee, Wis., U. S. A.





A NEW TWO-STAGE SERIES PUMP

High Efficiency in Centrifugal Pumps

Many water-works engineers are not aware of the high efficiencies that can be obtained in centrifugal pumps by the use of a properly designed and proportioned volute, rather than by the use of diffusion vanes. That high efficiencies are obtained with volute diffusers is demonstrated by a number of official tests on volute type centrifugal pumps in water-works service. For example, one installed at the municipal water-works in Minneapolis has maintained the uniformly high efficiency of 86 per cent over a period of four years, during which time no replacements or repairs whatever have been made to the pump. Another, at Toronto, showed an efficiency of 87.2 per cent in a recent official acceptance test.

The Minneapolis and Toronto pumps are single-stage machines. Where pumps driven by motors of slow or moderate speeds must deliver water at pressures higher than are desirable or profitable for a single-stage pump, instead of using a single-suction, multi-stage pump, two separate single-stage pumps are sometimes connected in series, so that one discharges into the suction of the other. This method has frequently been adopted, particularly in water-works service. In medium and smaller sizes the use of two independent pumps in series becomes somewhat more cumbersome, and a multi-stage pump is more often used.

However, it is not possible to obtain as high efficiencies with a commercial multi-stage single-suction pump as would be possible in a single-stage pump with double-suction impellers, not only because of the less favorable limitations imposed on the impeller, but also because there is not sufficient space for an efficient volute diffuser and suitable return passages leading from the diffuser to the eye of the succeeding impeller. The De Laval

Steam Turbine Company, Newark, N. J., has developed a new type of multi-stage pump, known as a "series" pump, in which the advantages of the double-suction impeller are retained. This is made possible by the use of a specially formed casing which provides individual volutes for each impeller with ample interconnecting passages within the casing itself.

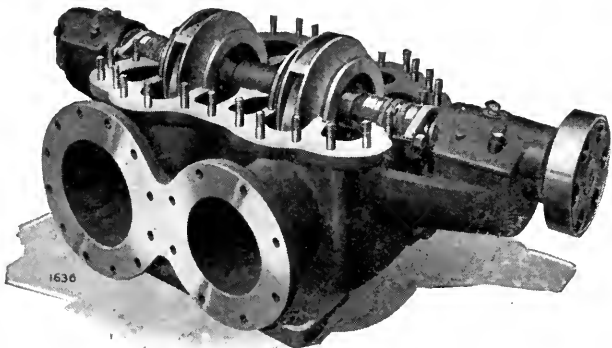
Cleveland Now Associated with Vermeule

H. Burdett Cleveland, well known in the sanitary engineering profession through his fourteen years' service from 1905 to 1919 as Principal Assistant Engineer of the New York State Department of Health and later for three years as Secretary and Consulting Engineer of the Barth Engineering and Sanitation Company, has opened a consulting engineering practise in association with Cornelius C. Vermeule, consulting engineer, 38 Park Row, New York City.

Pocket Coin Demonstrates Water Waste

As a means of helping water-works superintendents, a coin $1\frac{1}{4}$ inches in diameter is being distributed gratis by the H. W. Clark Company, Mattoon, Ill. This coin contains small holes $1\text{-}32\text{-}$, $1\text{-}16\text{-}$ and $1\text{-}8\text{-}$ inch in diameter, with figures under each hole indicating the leakage in gallons per 24 hours at 40 pounds pressure through holes of these sizes. The leakage through the $1\text{-}32\text{-}$ inch hole is 180 gallons, through the $1\text{-}16\text{-}$ inch hole, 960 gallons, and through the $1\text{-}8\text{-}$ inch hole 3,600 gallons.

This coin will aid the water-works superintendent or manager materially in suppressing waste. In metered service it assists in convincing the consumer of the correctness of registration of the meter where known leaks exist.



DE LAVAL TWO-STAGE SERIES PUMP WITH CASING COVER REMOVED



The Ideal Road Preservative

CALCIUM CHLORIDE in its pulverized form is one of the best preservatives for macadam, gravel or dirt roads. Through its power to absorb $1\frac{1}{2}$ to 2 times its own weight of water from the air, it prevents dust. It is readily spread on the road by an ordinary scoop shovel or a horse-drawn distributing machine like a lime spreader, as shown above, at a cost of about 2 cents per square yard.

73% to 75% PULVERIZED CALCIUM CHLORIDE

Carbondale Calcium Chloride is shipped in 400-pound drums which contain sufficient material to treat a road 18 feet wide by 130 feet long at the rate of $1\frac{1}{2}$ pounds per square yard. Calcium Chloride is not injurious to rubber, varnish, paint, etc., and is only washed off the road by the heaviest rains that would carry away some of the road surface.

Send for our Booklet "An Ideal Road Preservative."

CARBONDALE

CARBONDALE



CALCIUM CO.

PENNSYLVANIA

BRANCH OFFICES

NEW YORK

CHICAGO
BALTIMORE

PITTSBURGH

PHILADELPHIA

NEW ORLEANS



A "ROAD RAZER" EQUIPPED WITH SNOW-REMOVAL BLADE, CLEANING SNOW FROM AN UNPAVED STREET IN THE SUBURBS OF PEORIA, ILL.

Protecting Winter Business

It has been stated that the business of the United States loses about one-half billion dollars through traffic tie-ups in the winter months. The February blizzards of 1920 in New York City are now taken as classic examples of such losses. New York City at that time lost nearly \$60,000,000 in business. Smaller communities possibly have larger proportionate losses. The "Road-Razer" made by the Avery Company, Peoria, Ill., has been found particularly effective in many communities for year-round work. It handles the smoothing and grading of rough dirt roads in summer, and in winter has been very effective in removing snow quickly, easily and at low cost.

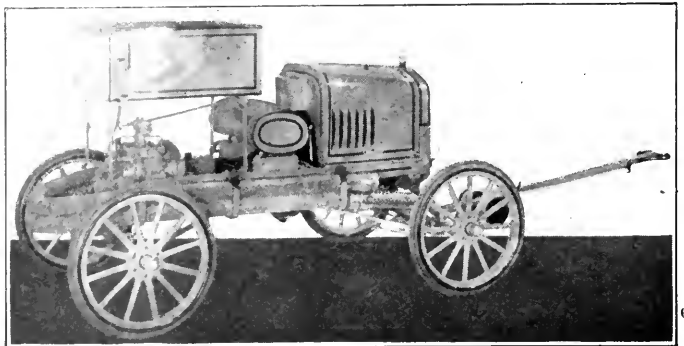
A Fire Engine Unit for Small Villages

In the "Village Queen" pumping engine recently brought out by the American-LaFrance Fire Engine Company, Inc., Elmira, N. Y., small communities will find an efficient pumping unit, weighing only 1,500 pounds, which can be readily hauled by hand or any automobile or truck. The engine consists of an American-LaFrance rotary gear pump, driven by a 4-cylinder gasoline motor. The unit is mounted on a pressed steel frame, carried on half-elliptic springs and equipped with rubber-tired wheels. The front axle has a large hand pole with a rope reel

and 50 feet of manila rope for drawing the engine by hand or for attaching it to an automobile or truck.

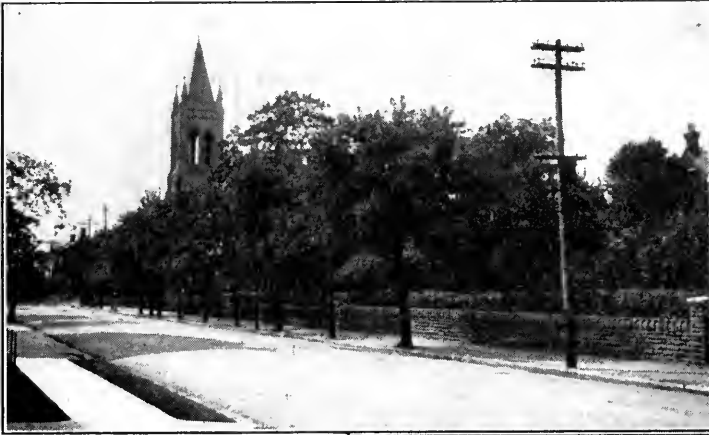
The 4-cylinder motor is used only for driving the rotary gear pump. A 10-gallon gasoline tank is mounted between the motor and the pump for furnishing fuel for the motor, and the radiator is mounted at the front end of the frame for cooling. An auxiliary cooling line connecting the discharge end of the pump with the water inlet on the motor furnishes a fresh supply of water to keep the motor cool while pumping. A shut-off valve in this line is provided at the pump for controlling the supply of water to the motor. The radiator is equipped with an overflow pipe to take care of any surplus water-supply for the motor.

The rotary gear fire pump is of the positive displacement type, the connection between the pump and the motor being made at the rear end of the transmission with the proper gear reduction. The pump is equipped with a 2½-inch suction inlet with strainer and one 2-inch discharge connection with the necessary gage. The pump can handle approximately 200 gallons of water per minute at 60 pounds pump pressure, or 100 gallons per minute at 100 pounds pump pressure. Three lengths of 2½-inch I.D. hard suction hose, 7 feet long, complete with heavy couplings, are furnished with the outfit, together with an outside suction strainer. The sheet steel hose box has a capacity of 300 feet of 2-inch cotton rubber-lined single-jacket hose coupled in 50-foot lengths. The entire apparatus is painted fire department red, striped with black and white. This makes a very striking and efficient fire department unit for any small community.



A LIGHT-WEIGHT, SMALL-TOWN FIRE ENGINE FOR HAULING BY HAND OR AUTOMOBILE

Beautiful Dustless Roads In Town and Country



Lays the dust without inconvenience to pedestrians. No tracking, no staining. Solvay is quickly applied by the common street laborer.

Solvay binds the surface and lays the dust. Economical and easy to handle.



SOLVAY CALCIUM CHLORIDE

"The Natural Dust Layer"

A clean, odorless, white chemical salt which lays the dust and is a perfect surface road binder.

Solvay keeps roads in wonderful condition; no ruts, no running on hills, no puddles in hollows. It is the perfect material for town and country road treatment. Economical in use and application—efficient in action.

Thirty-five conveniently situated distributing points assure prompt delivery and minimum transportation charges.

Write for the Solvay Road Book!

SEMET-SOLVAY COMPANY, Syracuse, N. Y.



MACHINE MOUNTED ON DASHBOARD OF AUTOMOBILE FOR MEASURING THE ROUGHNESS OF ROADS

New Instrument Records Condition of Roads

A new recording instrument designed for the use of highway engineers for making a record of the road surface has recently been placed on the market by the Universal Road Machinery Company, Kingston, N. Y. This machine, the first of its kind, is mounted on the dashboard of the automobile, as shown in the accompanying illustration. It is a compact instrument built entirely of aluminum. Within the box containing the instrument is a paper chart 6 inches wide, driven by a flexible shaft connected to one of the front wheels. Two recording pencils are actuated through connection with the front axle. The paper is furnished in length sufficient for the inspection of 11 miles of road. A clutch is provided so that the instrument can be operated or disengaged at will.

As the automobile is driven over the road, the chart moves in direct ratio to the distance traveled, one inch on the chart for each 50 feet of road, and the recording pencils, resting on the paper, make a series of irregular or straight lines, depending on the condition of the pavement. In this way the depressions and high spots are located, measured and recorded. The moving paper chart is in plain view at all times, so that notes and topography may be sketched in as the inspection is carried on. This also affords means for measuring the length of the road, locating culverts, ditches and property lines. The irregularities in the pavement are also automatically summed up, so that the observer at any time may read off the sum of the irregularities passed over by the car. This information may be reduced to inches of irregularities per mile of pavement by a simple calcu-

lation. This is found to be useful in comparing various types of pavements or various pavements of the same type as built in actual practise.

A New Stop-and-Go Traffic Signal

Traffic control problems are becoming more complex all the time, making the use of traffic control signals increasingly imperative. A new development in traffic control equipment was shown at the Good Roads Show in Chicago last month. This system of traffic control brought out by the Essco Manufacturing Company, Peoria, Ill., producers of the mushroom traffic light, provides a line of differently designed units for various combinations of circumstances. There are lanterns of various sizes, adapted for center suspension, mast arm mountings, bracket supports or individual post supports, and a street unit of the mushroom type which shows a changing signal in each direction and an auxiliary indicator for low signaling purposes. The control of the system is as flexible as its grouping. It is possible to have either manual control, semiautomatic control, automatic control, or synchronous control, or any combination of these.

All units are built with the three-lens arrangement that is becoming standard; that is, three colors, denoting stop, go and traffic change. The lenses are $8\frac{3}{8}$ inches in diameter and are backed up by a special silvered glass reflector that gives a remarkable visibility, not only when viewed from directly in front, but when viewed from the side. Phantom signals have been overcome, and what is claimed to be a remarkable daylight signal has been produced. Lamps of 25 watts are used in all units, one to each lens, giving a clear, distinct signal.



TO MAKE YOUR TOWN WORTH LIVING IN

Small cities, rural communities and the outlying districts of the big cities probably suffer more inconvenience and discomfort from dust than from any other source.

The dust nuisance makes a good town look like a careless town. Every passing vehicle puts more dust on the furniture and in the food. Dust makes more work for the housewife—makes the trimmest lawn and gayest flower bed look dead and dull.

After years of experimenting with costly water sprinkling and with sticky messes of various kinds, road men have now found the way to eliminate the dust nuisance for the entire season and to bind road surfaces at the same time and thereby lengthen the life of the road.

The modern method is to distribute a white flaky chemical salt on the roads twice each season. This chemical, called DOWFLAKE comes in 100 lb. moisture proof bags and is distributed on the road with an ordinary lime spreader. No expensive machinery is necessary or desirable.

DOWFLAKE binds and dustproofs roads by keeping them moist and firm. It begins to absorb moisture from the air as soon as it is spread on the road. It absorbs several times its weight in water, dissolves itself—and holds the moisture for months.

"How to Maintain Roads" is a new book on Dust Prevention and Low Cost Road Maintenance. Write for your copy today.

THE DOW CHEMICAL CO., Midland, Mich.

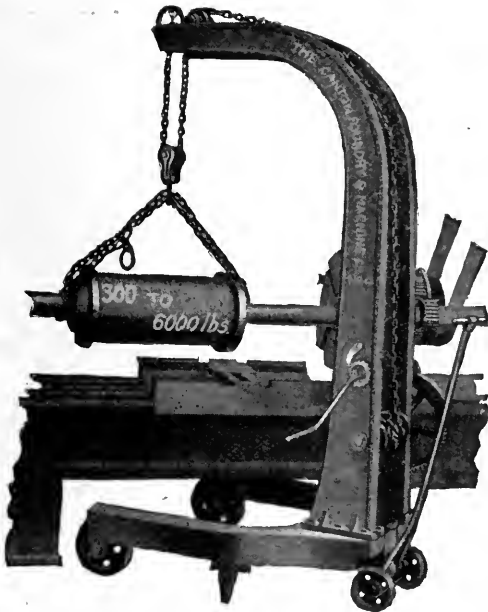
Eastern Office:

90 West Street, New York City

DOWFLAKE
73-75 %
**CALCIUM
CHLORIDE**

DOW

MIDLAND-MICH
100 LBS. NET
BUTCHER



A PORTABLE CRANE USEFUL IN MUNICIPAL MACHINE SHOPS, GARAGES AND POWER-PLANTS

A Handy Crane for Power-Plants and Garages

In municipal power-plants it is frequently necessary to lift some small piece of machinery which requires the lifting power of four or five men. In many plants this makes it necessary to call in all the men about the plant, some high-paid men, and to take laborers away from their regular work. Those plants, however, which are equipped with a Canton portable crane made by the Canton Foundry and Machine Company, 203 East 15th Street, New York City, will find that one man can readily handle most of the lifting jobs. This crane, illustrated above, is strictly a one-man tool. It goes quickly where nothing else can reach, into corners, under balconies and around machines. It is claimed that it will handle more work in less time than six strong men could do without it. The crane is made in two styles—the low base, 6 $\frac{3}{4}$ inches high, and a high base, 12 inches high. The low base is recommended for garage work, and the high-base crane will handle practically all work where headroom is not a question. The crane is made of semi-steel, furnished with guaranteed hand-forged tested chains, so that it is almost impossible for it to wear out.

An Auxiliary Cutter for Trench Excavator

A new trench excavator attachment by means of which the cutting range of trench excavators is greatly increased without changing the bucket, has been developed by the Buckeye Traction Ditcher Company, Findlay, Ohio.

This new rotary auxiliary cutter, as the device is called, makes it possible to cut with one machine trench work which would formerly have required two different models. This materially increases the variety of trench work which it is possible for a city to handle with one machine. The various models of this machine now cut trenches all the way from 24 to 76 inches in width.

The auxiliary cutter consists of two shafts, one on each side of the boom, each shaft being fitted with steel cutting teeth. As the shafts revolve, these teeth dig into the trench side walls, outside of the bucket, giving an extra cut on each side. The shaft supports are adjustable, permitting variations of cutting widths when desired. The auxiliary cutters require no additional power, as they take the load off the regular bucket side cutters. Power is transmitted by heavy steel roller chains operated from the shaft that drives the digging bucket. Four men, in two hours, can attach or remove the auxiliary cutter, which can be used with any Model C Buckeye excavator.

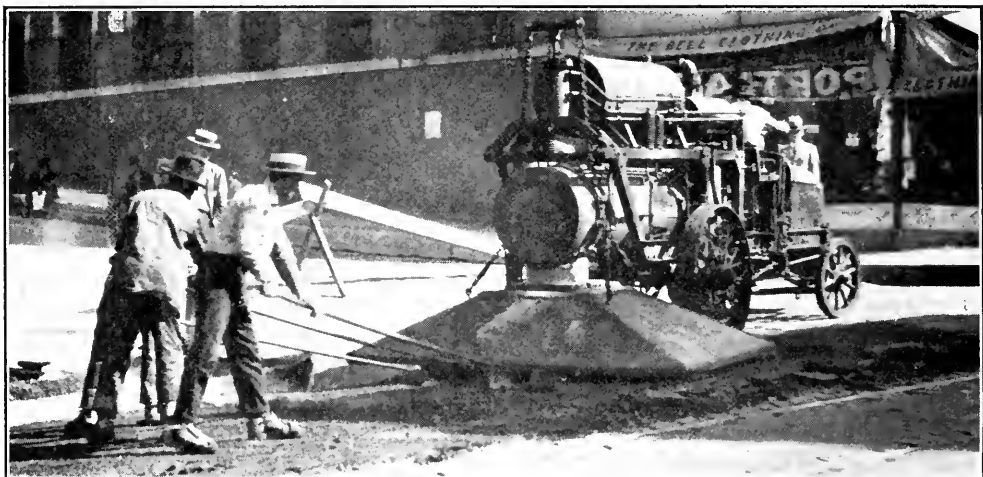
Fairchild Aerial Camera Corporation Expands

The Fairchild Aerial Camera Corporation, 136 West 52d Street, New York City, has recently opened a branch office in Dallas, Texas, to handle its work in the states of Texas and Oklahoma. The offices are located in the Adol-



THE SIDE CUTTERS SHOWN INCREASE THE EFFICIENCY OF THIS TRENCHING MACHINE

MAKE BETTER ASPHALT STREET REPAIRS



The Improved Lutz Surface Heater Softens 1500 Square Yards a Day

Proper bonding of old and new asphalt is made possible by this fool proof machine which requires hot water to operate. The heating hood slides on the ground saving time and heat. The machine heats 45 square feet of pavement in 1 to 2 minutes and moves quickly ahead. Send for our new prices and specifications.

THE EQUITABLE ASPHALT MAINTENANCE COMPANY
1901 Campbell Street
Kansas City, Mo.



Wearproof Signs and Street Name Plates

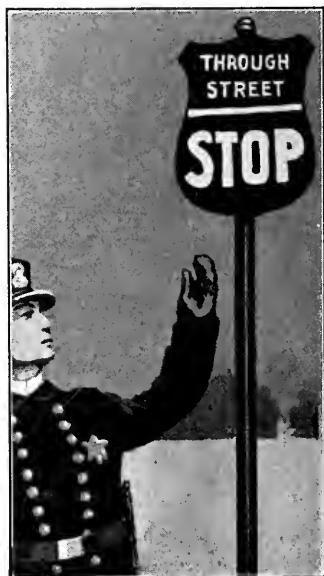
also

Public School and Quiet Zone Signs, Turtle Back Traffic Guides, and Automatic Danger Signals.

Write for Catalog.

UNION IRON PRODUCTS CO., East Chicago, Indiana

DRAWER H



THROUGH STREET STOP SIGN
USED BY CITY OF CHICAGO

phus Hotel. Horace D. Greenfield, formerly of New York, is acting as Southwestern representative. An operating crew is already in Texas, and active production will start immediately.

Clyde H. Butler has been appointed representative of the company in northeastern Ohio, and J. A. Newcomb, Jr., in Birmingham, Ala. L. B. Roberts, former Major, 29th Engineers, U. S. Army, and for some ten years with the U. S. Geological Survey, has recently become associated with the Fairchild Aerial Camera Corporation as Director of Engineering. Major Roberts was formerly a member of the engineering staff of Colonel William Barclay Parsons. Plans of the Fairchild Corporation are now formulated for the making of both photographic and topographic maps on various scales and according to recognized engineering standards.

On January 11 a very interesting exhibit of aerial photography, topographical surveys and mosaic maps, prepared from aerial photographs, was given at the home offices of the Fairchild Aerial Camera Corporation. Among the interesting exhibits was the new mosaic map of Kansas City, Mo., made for the City Planning Commission of that city and the now famous mosaic map of New York City.

A Self-Closing Waste Receptacle

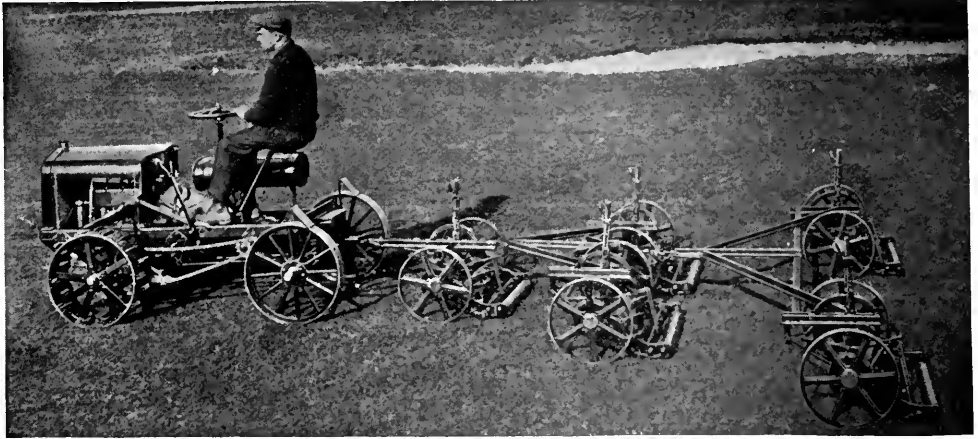
A waste receptacle that closes itself tight, thus preventing the spread of any fire which might start within the can, and which also keeps out flies, odors and the sight of waste material and prevents rain from getting in, has been brought out by the Economy Baler Company, Ann Arbor, Mich. The receptacle is neat in appearance, and whether it is set up level or not, always closes itself tight.

This waste can is made in four sizes from 12 x 12 x 18 inches to 22 x 22 x 36 inches and is finished regularly in green enamel or in white enamel at a small additional cost, and in grain mahogany, walnut or oak enamel on special order. For street use and in parks, the weather-proof baked green enamel with "Help Keep the City Clean" on two sides and "Waste Paper" on two sides is usually ordered. The can is equipped with a bag container which permits easy and quick emptying. This feature eliminates the necessity of removing the receptacle, thus prolonging its life and finish. The bag container also eliminates the extra man needed to dump the old-fashioned, open-top can and prevents the paper from blowing around when removed. The accompanying illustration shows one of these cans in use near the White House grounds in Washington.



A WASTE CAN IN THE PARK OPPOSITE THE WHITE HOUSE GROUNDS, WASHINGTON, D. C.

THE WORTHINGTON MOWER



WORTHINGTON TRACTOR AND "CONVERTIBLE QUINT"

SPECIAL FEATURES OF THE "CONVERTIBLE QUINT"

Third section may be attached to any Shawnee Triple at present in service and instantly detached by removing a single kingbolt.

Triple mower cuts swath of seven feet.

Quint attachment increases swath to eleven feet four inches—a gain of 65 per cent.

The public is advised that the combination of gang lawn mowers with mower tractor, either of the draft or push type, is fully covered by U. S. Patents issued and pending, owned or controlled by this company; that the sale of any tractor used in combination with a gang mower may render the vendor or user liable for infringement. This company will protect its rights.

WORTHINGTON MOWER COMPANY

CHICAGO
53 West Jackson Blvd.

NEW YORK
8 West 40th Street

Shawnee on Delaware, Pennsylvania
MONTREAL
109 Youville Square



AMBULANCES and PATROLS

For more than a quarter of a century Hoover vehicles have been faithfully serving the public. Every equipment is "custom-built" designed for mounting on any type chassis desired.

This policy allows the ideas of the purchaser to be incorporated in the body, thus meeting all requirements exactly.

The above illustration shows the type patrol used by the city of Cumberland, Md.

Our new catalog will interest you.
Write Department M for information.

HOOVER BODY CO.
YORK, PENN.

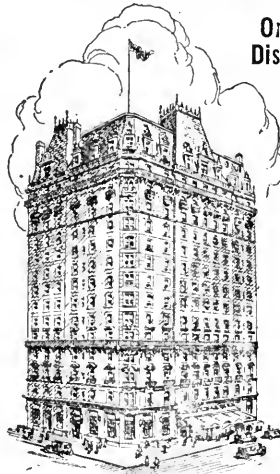
Eastern Sales Branch—Long Island City, N. Y.

The Martinique

Under Hotel McAlpin Management

Broadway, 32rd-33rd Sts., New York

One of New York's Distinguished Hotels



The Martinique offers comfortable rooms at moderate rates, and in its dining rooms, which are most attractive, one finds the best food, well served and at reasonable prices; Club Breakfasts, Special Luncheons and Dinners, or a la carte service if preferred.

The hotel is situated in the center of things in general, being convenient to shopping and wholesale districts and adjacent to the theatre section.

There is an entrance from the hotel to the New York Subways and Hudson Tubes, affording direct communication with the Pennsylvania, Grand Central, and Railroad Stations at Jersey City.

FRANK E. JAGO
RESIDENT MANAGER.

600 Rooms—\$2.50 and up

Volume

XXVIII

Number 3

The American City Magazine

New York

March

1923

Getting Ready for Summer

DURING the month of March, city officials in the northern states may be classified into three groups: (1) those whose chief energy is devoted to grumbling about the weather; (2) those who escape from the weather by a trip to Florida or other sunny clime; and (3)—a large and growing company—those who stay on their jobs and find in the waning winter an inspiration to plan for the spring and summer that are not far behind. For the third group—the type of official North and South, East and West, who usually reads THE AMERICAN CITY Magazine—the following questions may offer suggestions of special timeliness:

1. *Are your park and playground areas adequate for the needs of 1923, and are the grounds, buildings and apparatus in good repair? Have competent supervisors for the playgrounds been engaged?*

2. *Will the winter's wear and tear on the street surfaces be repaired promptly, and will your spring program of new paving be started as soon as the weather permits? Has proper provision been made for road oiling and street cleaning?*

3. *Are you preparing to quench the legitimate summer thirst of your citizens by an ample number of sanitary drinking fountains in the streets and public buildings? And is the water, for these fountains and for other purposes, both plentiful and pure?*

4. *Have plans been perfected for an annual "clean-up and paint-up" campaign?*

Having cleaned up, will you keep your homes and business buildings as safe as possible from fire by the intelligent work of a well-equipped fire department?

5. *Will the people of your city be encouraged to beautify their home grounds and cultivate the vacant lots?*

6. *Will a tree-planting campaign be inaugurated this spring with a competent forester or shade tree commission?*

7. *Has war been declared in intelligent fashion on the fly and mosquito and rat?*

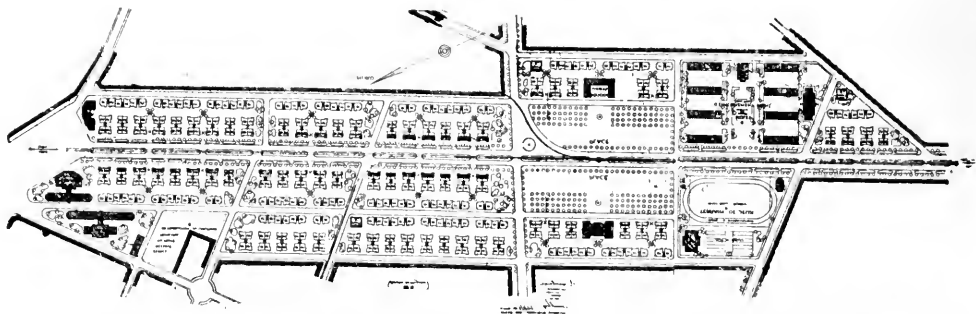
8. *Will your bathing beaches be ready for the hot weather crowds, and have contracts been let for new swimming pools, if needed?*

9. *Will traffic regulations be provided that will make your streets as safe and convenient as possible for the summer crowds?*

10. *Will the citizens be able to enjoy the maximum use of recreation facilities by the provision of adequate lighting at night of public tennis courts, bathing pools and beaches?*

11. *If your city has a tourist camp, has it been put in proper sanitary condition?*

12. *Are plans being made for Memorial Day and Independence Day celebrations that will be a real credit to your city?*



GENERAL PLAN OF THE GARDEN SUBURB, QUARTIER DES ETATS-UNIS, LYONS

The Cités-Jardins of Lyons and Rheims*

By Edith Elmer Wood

ONE point peculiar to France, which immediately strikes the foreign observer, is the extent to which housing reform here is linked up with the birth-rate. Especially since 1912, it has been regarded as a means of helping and encouraging the parents of large families (*familles nombreuses*)—technically, those with four or more children under 16—those whom landlords inevitably discriminate against and whom France so greatly needs.

In France, as elsewhere, two groups of housing reformers have been distinguishable from the start—the group who wish to accomplish their ends through private initiative, and those who wish to accomplish the same ends through state and municipal action. Both are agreed, however, that the Government must facilitate in every way the erection of houses for the people, especially through the provision of credit.

The earliest French housing laws were enacted by the private-initiative group. They were modeled on the Belgian law of 1889. The French law of 1894, amended and enlarged in 1906, provided for housing loans to limited-dividend societies and for tax exemptions. It also established local unpaid housing committees (*comités de*

patronage) reporting to a national committee under the Ministry of Labor (since transferred to the Ministry of Health). The law of 1908 (*loi Ribot*) also followed the Belgian model in facilitating home ownership and the acquisition of a garden plot by the members of the working class.

In 1912 the state-action group were in power and passed a law to encourage direct building by communes and departments through new public entities, whose creation was optional—the Offices Publics d'Habitations à Bon Marché. It was this act which first emphasized the helping of large families.

Everything seemed to be gathering headway for extensive undertakings, when the war interrupted. Since the war, housing activities have been resumed. There are now 103 Offices Publics d'Habitations à Bon Marché.

In addition to her 600,000 homes to be rebuilt in the devastated areas, France has suffered from the world-wide house shortage and from sky-rocketing building costs. Hence it was considered necessary, not only to liberalize the provisions for government loans and tax exemptions, but to provide for a direct subsidy (law of March 31, 1919). This subsidy cannot exceed one-third of the total cost and is not granted except where two-thirds or more of the dwellings concerned are occupied by large families. The total expenditure under this head is lim-

Cité-Jardin, as used in France, does not in the least mean the English Garden City. It is rather a garden suburb, or residential quarter where small houses are surrounded by gardens. Sometimes even the small houses are absent, and we have apartment houses in a setting of trees and lawns.

* Copyright, 1923, by Edith Elmer Wood.

ited to 300,000,000 francs.

The most extensive undertakings by Offices Publics are by those of the city of Paris and the department of the Seine. In the second category, those of the city of Lyons are of especial interest, the more so as they are quite unknown in the United States.

What Lyons Has Done

In 1914 Lyons had just prepared for itself a city plan when the war came, and all such things were laid aside. After the armistice, the plan was gotten out, revised and adopted. It will be many years before it is carried out in its entirety, for it looks well ahead in providing parks and thoroughfares for the future growth of the city, and very large sums will need to be expended in widening and straightening existing traffic streets.

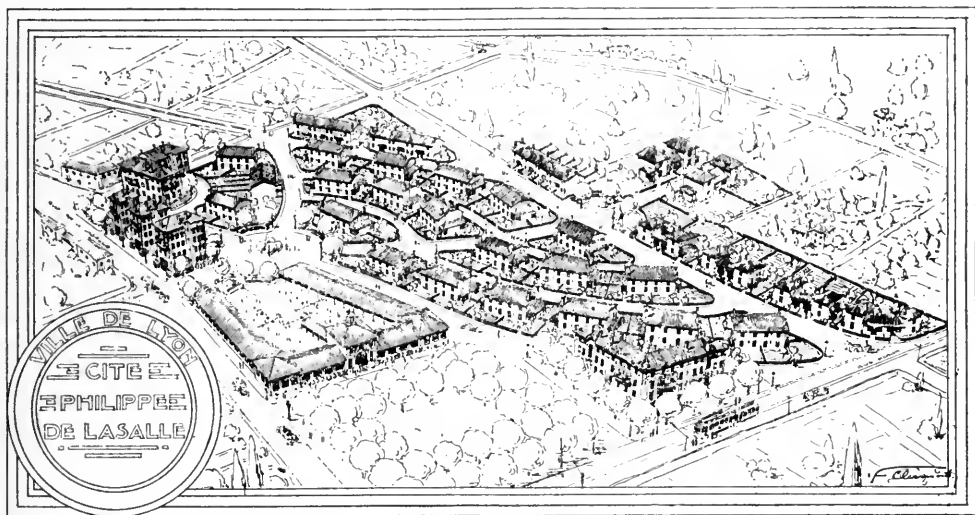
One important project calls for the prolongation of the principal business street, the Rue de la République, straight up a hill and through a tangle of crooked streets and dingy houses. Three projects are marked for immediate execution: the reconstruction of the Moncey district; the building of a small garden suburb for working people with large families on the heights of La Croix-Rousse; and the creation of a large garden suburb, also for working people, to be called the Quartier des Etats-Unis (Quarter of the United States). This will be on level ground near the factories.

The Quartier Moncey, close to the Préfecture, is an overcrowded district of narrow streets, unwholesome old houses, and small courts. Existing streets are to be widened, new thoroughfares cut through, old rookeries torn down, and the interior of blocks opened up. It is believed that by a judicious use of excess condemnation and assessment of benefits, the project can be made very nearly to pay for itself, as the new lots to be created will be worth very much more than the old.

Lyons has its city housing bureau,—Office Public des Habitations à Bon Marché,—which was established in 1920. This office is pushing the two housing projects already alluded to.

The Croix-Rousse suburb, Cité Philippe de Lasalle, is to have 124 one-family cottages and 61 flats. It is built on a tract with an area, apart from streets, of 24,600 square meters. The city has donated the land and put in streets, sidewalks, etc. The National Government gives one-third of the estimated cost of 5,050,000 francs as a subsidy and lends more than three-fourths of the remainder for 40 years at 2½ per cent.

At the time of my visit last summer, twenty-four cottages had been built and occupied, and a contract had just been awarded for fifty more, including some with six rooms. The ones I saw each had four rooms and two stories. They were built in groups of four, back to back to economize walls and create larger and more sightly



GENERAL PERSPECTIVE VIEW OF THE GARDEN SUBURB OF PHILIPPE DE LASALLE, LYONS

units. Porches and entrances were at the four corners, hence widely separated from each other. Each house had a small laundry or scullery, a small cellar and a water-closet. All the families were raising vegetables and flowers in their gardens with great assiduity. With one exception (a blind war veteran with a young wife and baby), they all belonged to the *famille nombreuse* class, having from four to seven children under sixteen, besides a few older ones and a grandparent or so. They were genuine working-class tenants, including a road-mender, a metal worker, an electrician, a boiler maker, and a man employed in a rolling mill. The blind soldier makes brushes. He is the only one who pays the full rent of 1,092 francs a year. Everybody else gets rebates for his extra children. The family with seven children under 16 pay only 672 francs.

Work had not begun on the Quartier des Etats-Unis, when I was in Lyons, but the preliminaries were well advanced. This *cité-jardin* will have a population of 10,000 or 11,000 when it is completed. It occupies a long rectangle of land and will have six longitudinal rows of small detached three- and four-story apartment houses. Two of these small units, and sometimes four of them, will be united by a common open-air staircase. There will be 137 separate buildings. The apartments will have three, four and five rooms, besides kitchenette, pantry, water-closet and balcony. Each apartment will also contain a shower-bath. As any form of bath in a working-class dwelling is unusual on the Continent, I expressed my pleased surprise to Monsieur Chalumeau, the City Engineer, who was showing me the plans. He said that as water was being piped to the apartments anyhow and waste water carried away, the additional expense of the shower was not more than 500 or 600 francs.

The Quartier des Etats-Unis will have abundance of trees, grass, and open spaces, a football field, a bowling-alley, a library, club rooms, schools, hotels for single men and for single women, a restaurant, a day nursery and a number of shops. The outcome of this experiment in municipal housing will be watched with interest in the United States—the more so on account of the name which the city fathers of Lyons have done us the honor of bestowing on it.

For the Sinistres of Rheims

When I was in Rheims in July, 1922, it was my privilege to meet Monsieur Georges Charbonneaux and his wife and to visit the very charming garden suburb of Chemin Vert, which owes its existence to his energy, devotion and generosity.

He has since sent me, at my request, a collection of plans and photographs and an explanatory memorandum which tells the story so well that I cannot do better than to translate and append it, premising, however, what the reader would never guess, from his modest account, that the Foyer Rémôis is to all intents and purposes its president, Monsieur Georges Charbonneaux. Like most successful men, he is a firm believer in individual initiative, but so far as any adequate solution of the housing problem is concerned, he is convinced that private initiative must be supplemented by strong government support in the form of loans on generous terms. He has secured both loans and subsidy for his *cité-jardin*, but he had to work very hard to get them.

Chemin Vert* is built on high ground overlooking the city of Rheims. Its axial street, as one looks along it, frames a beautiful view of the cathedral towers. The layout and architecture are good, and there is plenty of open space. The tramway company is to build a branch connecting the new suburb with the center of the city. The only drawback to the site chosen is the lack of trees, the tract having been previously used for market gardens. Trees have now been planted, as well as grass, shrubs and flowers, but it will take time, of course, to produce the desired effect.

A very special—and successful—effort has been made to give variety and cheerfulness of aspect. The houses are all covered with rough-cast stucco in warm gray, deep cream or light golden brown. The roofs are of red or mottled tiles. Doors, shutters and window casings are variously and always gaily painted—red, blue or green. The effect, however, is never violent or gaudy. After four years of bombardment or exile and four years more of living in provisional shacks in the midst of indescribable ruins, there is no doubt that the *sinistres* of Rheims need cheering.

* Plans and layout are the work of Monsieur J. M. Auburtin of Paris, Consulting Architect to the French Government.

At the time of my visit, about half of the dwellings of Chemin Vert were occupied, and the rest were nearly ready for their tenants. The same was true of the shops.

In most of the houses, each family occupies two stories, but a few were built as two-family flats, with a four-room apartment on each floor. They are not so well liked, however, as the two-story cottages. A certain number of cottages, intended for office employees rather than industrial workers, have a parlor and a kitchen instead of the big *salle commune* and rent for 70 francs a month.

Monsieur Charbonneaux' narrative follows:

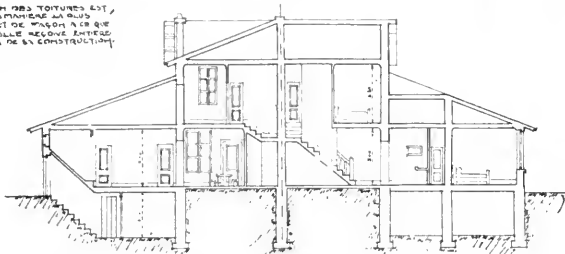
"The Foyer-Rémois, a joint stock housing so-



ELEVATION

COUPE

LA DISPOSITION DES TOITURES EST
ETABLIE DE LA MANIÈRE LA PLUS
ÉCONOMIQUE. ET DE MANIÈRE QUE
CHACUNE D'ELLE REÇOIVE ÉGALEMENT
LE PLUS GRAND DE LA CONSTRUCTION.



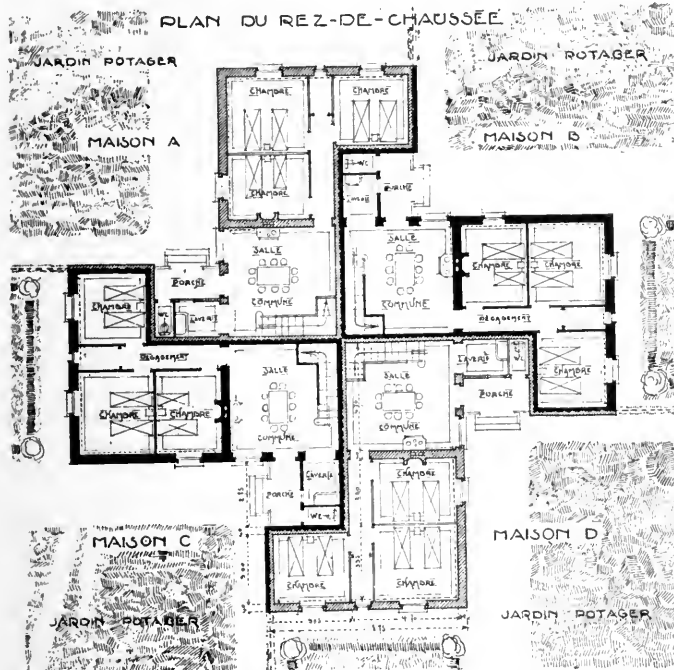
ELEVATION OF GROUP OF FOUR SIX-ROOM COTTAGES IN THE
GARDEN SUBURB OF PHILIPPE DE LASALLE

ciety for large families (*familles nombreuses*) was founded in Rheims in 1912 by a group of philanthropic citizens, with a capital of 1,250,000 francs. Its statutes have been approved by the Ministry of Labor and it is about to be recognized as being 'of public utility.' Its statutes

prohibit the payment to shareholders of any dividend in excess of 4 per cent. As a matter of fact, it has distributed nothing since its creation except a dividend of 1 per cent during two years.

"The society's aim was to build, in the course of a dozen years, enough good, sanitary, one-family houses to accommodate all the big families of small means in the city of Rheims. There were at that time 1,025 such families. During its first year the society built 20 houses, the next year 16, and in 1914 80 dwellings were in process of construction when the war broke out. The houses under construction were entirely demolished by the bombardment; the 36 completed houses were two-thirds destroyed.

"As soon as the armistice was signed, the directors of the Foyer-



A GROUP OF FOUR COTTAGES, EACH WITH SIX ROOMS, IN THE
GARDEN SUBURB OF PHILIPPE DE LASALLE



BIRD'S-EYE VIEW OF GARDEN SUBURB OF CHEMIN VERT, RHEIMS

Rémois undertook the rebuilding of the damaged houses—a task completed in July, 1919.

"They also had in mind to continue the work undertaken before the war and to complete it much more rapidly than had been contemplated. They decided to build two garden suburbs, one containing 600 dwellings and the other 400, at opposite extremities of the city, in locations as healthful and airy as could be secured. After much searching they purchased 45 hectares (about 112½ acres) for the first garden suburb, which has since been built on the Boulevard Pommery and called the Cité du Chemin Vert. For the second suburb they obtained 30 hectares (75 acres) on the Boulevard Charles-Arnould.

"There were many difficulties to overcome. A very large amount of capital must be secured. But it was necessary first of all to amend the existing law, which allowed substantial favors to societies building low-cost houses (*habitations a bon marché*), but defined low-cost houses as those whose price did not exceed 8 or 9,000 francs. Such prices were impossible after the war, as the cost of construction at that period had quintupled.* It was necessary, therefore, to obtain the passage of an act increasing the

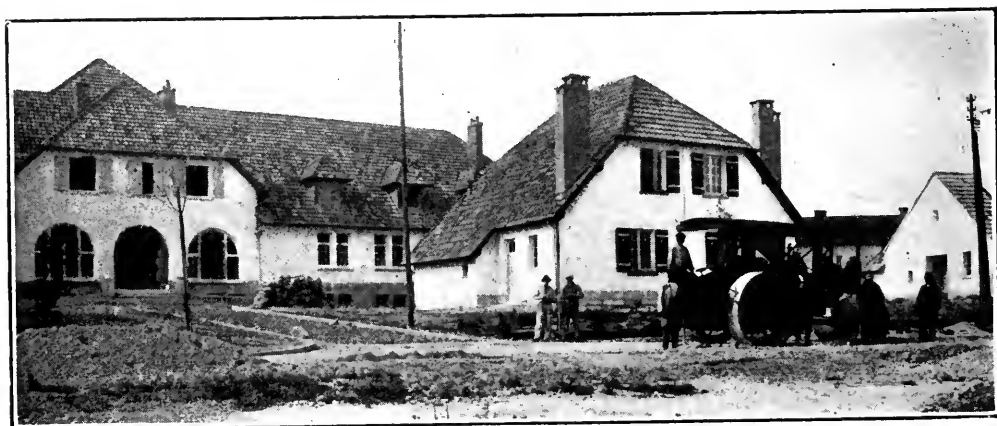
maximum permissible cost of a low-cost house.

"To secure sufficient funds for the project, it was necessary to obtain a large loan from the Bank of Deposits and to work out at the same time some way of utilizing claims to war indemnities which the society might acquire from owners who, because of old age or ill health, did not intend to rebuild. All these formalities took a long time, and it was also necessary to obtain from the city of Rheims, whose reconstruction plan† had not yet been adopted, an authorization to build and to employ the *tout-a-l'égout*‡ system for the evacuation of rain water

*The highest peak of building costs in France was reached in July, 1920. Building costs have fallen now to about three times what they were in 1914.

†It is of interest to recall that the plan for the reconstruction of Rheims which was finally adopted was the work of George B. Ford of New York. Its author may not recognize it, however, when it is carried out, as it is still being modified to meet the views of this or that property owner who appeals to the City Council.

‡Many French cities use their sewers only to carry off waste water, each house having a cesspool, which is more or less periodically emptied. Progressive cities are now adopting the *tout-a-l'égout* (everything to the sewer) system and doing away with the cesspools.



FRONT ENTRANCE OF INFANT WELFARE STATION AND DAY NURSERY (AT THE REAR OF THE PICTURE), CHEMIN VERT

and sewage. It was near the end of 1920 before all these difficulties were surmounted and the society could start building.

"As it was extremely difficult to procure building materials, the first step was to erect wooden sheds covering a surface of nearly 10,000 square meters, connected with the railroad and the canal, in which cement blocks and tiles were made which would be used in the projected dwellings. Carpenters' shops were also installed for the woodwork. Narrow-gage (Decauville) tracks were laid along the 7 kilometers (a little over 4 miles) of future streets of the suburb, which carried all materials to the spot where they were to be used. When a supply of materials had been accumulated, building could at last begin. The actual construction of the 600 houses was finished in less than a year. The garden suburb has been built on a tract of 30 hectares, which allows 500 square meters per dwelling, of which 45 to 50 are covered by the

manufacture of hosiery, etc. Twelve shops have been built for the convenience of the tenants, where they can purchase meats, groceries, dry goods, hardware, etc. A steam bakery* produces all the bread used by the 3,500 inhabitants of the suburb.

"A large building has been erected for the use of the infant welfare station (*Goutte de Lait*), a day nursery (*Crèche*), and a trade school for young girls. These agencies have been planned along the most modern lines and will be of great service. It is planned to have two special dormitories, where young children up to six or seven years old can be cared for for a fortnight following the confinement of their mother.

"Finally, a big community house has just been begun. It will include a library, a dispensary, an entertainment hall for 600 people, club rooms, gymnasium, and 50 shower-baths.

"A Catholic church, built by special private subscription, will be erected soon. In the mean-



COTTAGES AND STREET AT CHEMIN VERT

house; 300 are reserved for the garden and the rest for streets and open places.

"The building materials were standardized, but that did not prevent their combination in various ways to obtain a dozen different types of dwelling. The great majority consist of four rooms of about $3\frac{1}{2}$ meters by 4, a laundry, a water-closet, a small cellar, and in the garden a little house and wire run for chickens or rabbits. The gardens are fenced with cement rails, along which privet hedges will be set out. Ivy, clematis, Virginia creeper or climbing roses have been started at the walls of the houses. The wider streets have been planted with trees, and strips of lawn 3 meters wide separate the sidewalks from the gardens. A few dwellings contain only three rooms, while others contain five, these latter being reserved for families with eight or more children.

"Fifty houses have attached to them workshops with electric power, permitting such home industries as turning in wood or metal, weaving,

time there is a temporary board chapel. A site has been reserved for a Protestant church in case there should be enough Protestant tenants to warrant its erection.†

"A plan is being worked out for an open-air school for 1,200 children. It is probable that the school buildings will be started before winter [this was written in September]. There will be twenty-five classes including kindergarten (*école maternelle*) and classes for boys and for girls. The cost of the school buildings is estimated at 4,000,000 francs.‡

"The complete cost of the *cit * (including the

*This bakery is a model from the hygienic point of view. Very few of us are lucky enough to get our bread from such a source.

† About one per cent of the population of Rheims are Protestants.

‡ The Foyer-R mois is to build the schools. They will then be turned over to the school authorities of Rheims. School is being held temporarily in the building material sheds.



GROUPS OF SHOPS AT THE CIRCLE, CHEMIN VERT

price of the land and the planting of fruit trees and shade trees, vines, etc., the construction of 7 kilometers of roads, and the installation of sewers, water and electricity) amounts to 30,000,000 francs*, all paid for at the present time.

"Rents average 60 francs per month, with a reduction of 5 francs a month for each child beyond the third under sixteen years of age. That is to say, a family with ten young children would pay only 25 francs a month rent. These rents are calculated to cover the annual charges and up-keep of the *cité*, including the streets and lawns, which are under the society's care. The society will have to procure through the gifts of generously disposed persons the money necessary to run the social services, which will cost not less than 200,000 francs a year in the Chemin Vert suburb, and 150,000 francs in the projected suburb on the Boulevard Charles-Arnould.

"Fifteen hectares of land are held in reserve for the future growth of Chemin Vert.† In regard to the suburb on the Boulevard Charles-Arnould, it has not been possible so far to start building on account of uncertainties connected with the city plan. But the society hopes to be able to begin work in the spring of 1923."

* I do not know how much of this was contributed by the National Government on subsidy or loan basis (the maximum subsidy possible would have been one-third the cost of the dwellings), but from the very low rents (compare those at Lyons), which are calculated to cover charges and up-keep, it is evident that the contribution of Monsieur Charbonneaux and his friends of the Foyer-Rémois is regarded by them as an out-and-out gift on which no return whatever is to be made. It is also evident that their contribution must have been a large one.

† They are to be used in the meantime for football and other sports.

When I asked Monsieur Charbonneaux' permission to publish in the United States an account of his *cité-jardin*, he replied, with a smile, that he believed it might be a good idea to let it be known there that the French sometimes did things all by themselves. (He had just been expressing the warmest appreciation of American relief work in France.) I think we can understand how he felt about it.

Nevertheless, my countrymen can turn the table and have a good-natured "last laugh" if they choose. For when I asked Monsieur Charbonneaux whether he had the funds in sight for running his social services, he admitted that he had not. And when I further asked whether he would accept help from overseas if it were offered, he replied that in such a contingency he would indeed accept it with gratitude. So I shoot my arrow in the air in the hope that it may fall at the feet of some benevolent person of large resources who would like to have a share in cheering up the *sinistrés* of Rheims and helping them back to normal life. I know of no place where the investment of a few thousand dollars would do more good or be in better hands.

ACKNOWLEDGMENT.—The foregoing article has been prepared for THE AMERICAN CITY from material to be used in the author's forthcoming book on recent housing developments in Western Europe. Mrs. Wood has spent ten months in personal study of the places and conditions described.

The Electric Power-Plant and Water-Works of Ottawa, Kansas

Municipal Power-Plant Supplies Current to Eight Communities Outside of City Limits

By W. O. Myers

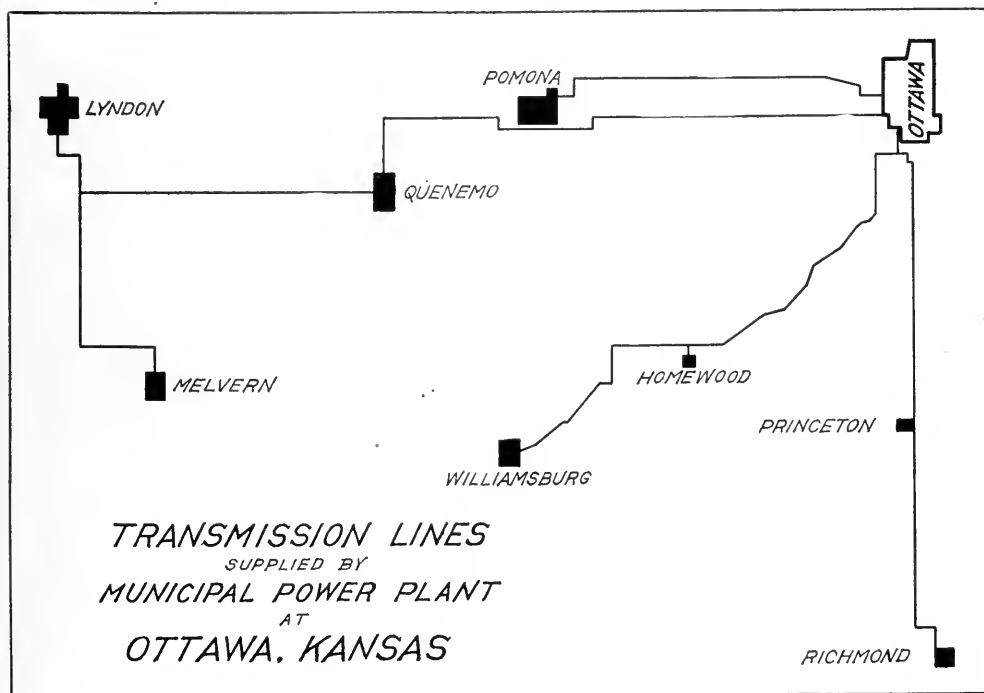
City Engineer and Superintendent, Light and Water Department, Ottawa, Kans.

OTTAWA, Kans., situated about fifty miles southwest of Kansas City, has owned and operated its water-works and power-plant since July, 1906, with very satisfactory results. Extensive improvements have been completed during the last year, and Ottawa now has one of the best municipal plants in the state. Besides the service to the citizens and industries of Ottawa and others close to town, there are four transmission lines leading out to nearby towns, supplying electric service to Pomona, Quenemo, Melvern, Williamsburg, Homewood, Lyndon, Princeton and Richmond.

Power-Plant Equipment

The power-house, pumping station and filtration plant are combined, and are op-

erated by a force consisting of four engineers, three firemen and two coal handlers. Additional help is provided when necessary, for more than ordinary repair work. The boiler-room equipment consists of three 323-h. p. Springfield boilers with Foster superheaters designed to give 150 degrees superheat. Two of the boilers are equipped with Combustion Engineering Corporation Type "E" stokers, and a third stoker has been purchased, but one boiler has been temporarily equipped to burn natural gas and oil. Two oil tanks, with a capacity of 1,750 barrels, have been installed to provide a supply of fuel oil for use in emergency and at times when the price of oil will justify its use in place of coal. A spur track, 1,710 feet in length, was recently completed, and coal-handling



apparatus with weighing devices is to be installed. A 200-foot reinforced concrete chimney and new steam piping with cast steel distributing header are among the new improvements.

The generating equipment consists of one 1,563-kv.-amp. Curtiss turbine, one 625-kv.-amp. Westinghouse geared turbine, and one 375-kv.-amp. DeLaval-G. E. geared turbine, each provided with a surface condenser. Circulating water is obtained by using the water-works reservoir, containing clarified water, as a spray pond, and the piping is arranged so that water direct from the low-service water-works pumps may be put through the condensers.

The turbines are located within the original engine room and to install them it was necessary to remove the old engines and their foundations and undermine the walls of the brick building in order to construct the basement required for the condenser equipment. The first of this work was done in 1916, when the 375-kv.-amp. unit and a new switchboard were installed. The 625-kv.-amp. unit was installed in 1919, and the 1,563-kv.-amp. unit during the past year.

Professor George C. Shaad, of the University of Kansas, assisted the city in planning the improvements and purchasing the equipment. The construction work was handled by a force organized and directed by the superintendent.

The Filtration Plant

During the past year a three-unit, 2,250,000-gallon filtration plant, designed by Black & Veatch, and constructed by the Chanute Construction Company, was completed, and a new 1,500,000-gallon Worthington, Corliss valve pumping engine was installed.

Water is obtained from the Marais des Cygnes River at a point about three-fourths of a mile from the power-house and is delivered to the sedimentation basin at the power-house by remote-controlled motor-driven pumps. From the sedimentation basin the water flows by gravity into a 5,000,000-gallon storage reservoir, which is used as a spray pond for the electric plant, giving the water liberal aeration. From the storage reservoir about 2,000,000 gallons can flow by gravity to the filters, passing first through a coagulating basin, where

it is prepared for filtration by the addition of the necessary alum.

The system of piping is arranged so that water can be taken direct to the filters from the settling-basin if it is desired to cut out the storage reservoir, and the circulating pumps can be used to deliver reservoir water to the filters, should the height of water in the reservoir become too low to deliver water to the filters by gravity. In planning the improvements made during the last eight years, particular attention has been given to probable conditions that might cause interruptions to service, so far as they could be foreseen, and provisions have been made to guard against such interruptions. A sump pit with motor and pump has been provided to remove drainage from the plant and wash water from the filters when back-water from the river may submerge the sewer during floods. During the summer of 1913 and again in 1918 there was a shortage of water in the river, and to provide an ample supply for the future, the city's construction force built a storage dam in the river about four miles from town, during 1920 and 1921.

With the improvements recently completed and some still under construction, the plant will be well equipped to furnish first class service at low rates, as the cost has been kept down to a very reasonable amount. The present indebtedness is \$409,100 (outstanding bonds) for a 2,000-kw. electric plant and a 2,000,000-gallon water plant, and the cost to the taxpayers has been nothing. During the first year the plant was operated by the city, \$6,800 was raised by taxation to pay interest on bonds, but this amount was charged to the Water & Light Department and was returned with interest, the total amounting to \$9,695.68. All other interest on bonds, operating expenses and cost of improvements to the amount of \$229,890.69 have been paid out of earnings. Bonds totaling \$42,000 have been retired and \$42,843.79 has been accumulated in cash, reserve and sinking funds up to January 1, 1923, from earnings of the plant. The rates charged during all the time the city has owned the plant have been below the average rates charged elsewhere for similar service.

The electric service rates were increased slightly in 1920, when it was found that war prices were remaining with us, but no

increase has been made in the rates for water service, except to make the minimum \$6 per year, which increased the cost to some consumers still supplied at flat rates. The present rates for electric service for residence and commercial lighting and small power are: for the first 100 kw. hrs. 7 cents; next 100, 6 cents; next 100, 5 cents; next 100, 4 cents; all in excess of 400 kw. hrs. per month at 3.7 cents per kw. hr.; minimum monthly bill, \$.75. Customers outside the city limits are charged 1 cent per kw. hr. more, and their minimum is \$1. Single-phase motors up to a total of 3 horse-power may be supplied through lighting meters at lighting rates, but the minimum is increased \$1 per horse-power. The power rate is a combination fixed charge and energy rate: \$1 per horse-power connected, plus 2 cents per kw. hr. for the energy consumed.

Water service is charged for at the rate of 25 cents per 100 cubic feet for the first 400 cubic feet; next 3,000, at 15 cents; next 6,600 at 12½ cents; next 90,000 at 6½ cents; and all in excess of 100,000 cubic feet per month at 4½ cents, except that for residences and irrigating gardens the rate between 400 cubic feet and 19,000 cubic feet is 10 cents per 100 cubic feet. The minimum monthly bill is \$.50. About 700 services are still supplied at flat rates, costing \$12 per year for a 6-room house with bath and closet, or \$6 per year for domestic use only. No hose privileges are allowed on flat rates.

The city pays for the public fire protection and street lighting from funds raised by taxation. Fire hydrants are charged for at rates depending upon location, that make the average cost per hydrant slightly under \$40 per year. Two hundred and sixty-two 100-candle-power street lights in the residence districts are furnished at \$18 per year each. An ornamental lighting system in the business district, consisting of ninety-five 400-candle-power lamps on cast iron posts connected by underground cables, installed at the expense of abutting property owners, but maintained by the Water & Light Department, is supplied at a kilowatt-hour rate that makes the cost per lamp about \$24 per year.

The peak load on the electric plant at present is 1,000 kw., and the load factor based upon peak for the month of December, 1922, was 40 per cent. Customers'

motors, 1 horse-power and larger, in Ottawa total 1,115 horse-power, and on transmission lines about 100 horse-power. The transmission line peak load is about 175 kw., more than half of which is on the Quenemo line, supplying: Quenemo (population, 556), 16 miles west of Ottawa; Lyndon (population, 763), 26 miles, and Melvern (population, 505), 27 miles from Ottawa. Quenemo and Melvern were formerly supplied by an oil engine plant, operated by the city of Lyndon, but when this plant became overloaded, Quenemo built to Ottawa, and later operation of the plant at Lyndon was discontinued. Lyndon is the county-seat of Osage County and has water-works and sewers and uses electric power for the city pumping. Quenemo buys current at the switchboard at Ottawa and sells to Lyndon and Melvern. Power is transmitted at 13,200 volts and distributed in each of the three towns at 2,200 volts.

Pomona (population, 436), 10 miles west of Ottawa, was the first to secure service from Ottawa. Transmission is at 6,600-volt, single-phase, and it is stepped down direct to 110 and 220 volts.

Williamsburg (population, 385), 17 miles southwest, has a 6,600-volt, single-phase line, and furnishes service to Homewood (population, 60), 10 miles from Ottawa. Williamsburg formerly operated a two-unit oil engine plant.

Richmond (population, 425), 16 miles south, has a 6,600-volt, single-phase line, and furnishes electricity to Princeton (population, 211), 9 miles south of Ottawa.

All these transmission lines are owned by the towns served, and current, except for the Richmond line, is measured at the switchboard of the power-house at 2,200 volts. The single-phase lines are charged 4 cents per kilowatt-hour at the switchboard, Richmond 4½ cents for current about one-half mile from the city limits. The load-factor is higher on the 3-phase Quenemo line, and their rate is 3¼ cents at the switchboard.

The towns served have found it possible to sell electricity at rates ranging from 10 cents to 13½ cents per kw. hr., and pay expenses, while those that formerly operated their own plants had service less than 24 hours per day and often found the costs exceeded the income. Three other towns are now considering service from Ottawa.

It has been the policy of the city of Ottawa to build up an efficient plant and furnish service to its citizens and industries and to the neighboring towns at the lowest possible rates. Some computations were made recently to show the relative cost of twelve months' power service to typical customers in Ottawa, as compared to the cost of the same service from the

largest plants furnishing service in Kansas, and it was found that thirty out of thirty-five bills were larger at the rates charged by the big plants. Ottawa has good railroad connections and hopes to build up a load that will permit its power-plant to survive when the small plants are forced out of existence, which may happen through coal shortage or embargoes.

Rubbish Helps to Make Foundation for Roads

Ashes and Cans Used to Fill in Low Areas in Road-Beds Prior to Construction in Salt Lake City

By T. T. Burton

Commissioner of Streets and Public Improvements, Salt Lake City, Utah

AN economical method of getting rid of ashes and tin cans and also helping to build up wet spots in roads has been carefully thought out in Salt Lake City. The ashes and cans are used to make fills in low areas and form drainage for the surfacing that is placed on top.

About 150 to 250 cubic yards of refuse of all kinds are gathered each day throughout the city. This material is hauled to the roads by motor trucks, and ordinarily from

18 inches to 3 feet of the loose material is thrown on the road. This is leveled by means of a drag, hand labor being used to throw rough material, such as large cans, stoves, bed springs, baby carriages, etc., into the center of the road. The entire mass is then rolled with a 15-ton steam roller. When the roller passes over the surface, it smashes the cans and metal material so that it is very easy to cover the surface with screened gravel having nothing in it larger than an ordinary hen's egg. When the



TIN CANS AND ASHES DUMPED ON ROAD TO FILL LOW SPOTS JUST BEFORE ROLLING, IN SALT LAKE CITY, UTAH



GRAVEL ROAD LAID ON BASE FILLED WITH ASHES, TIN CANS AND RUBBISH
Notice standing water at right—the former elevation of this road

gravel is applied to this kind of surface it seems to pack more readily than when it is placed on a dirt surface.

Some of the roads built in this manner are now being used for the third season. They were constructed in a swampy section of the city and are in a very good state of repair. Besides utilizing this waste material, Salt Lake City is providing a dump which is two or three miles closer to the city than the ordinary dumps used. In some areas the people residing on the streets treated in this way have complained during the construction of the roads that they were troubled with rats. We have found that in the process of rolling, this objection has been entirely eliminated. The

material is compressed in such a way as to kill everything that is alive in the dump and makes it impossible for rats to dig through as they usually do in such dumps.

In a recent examination of a section of the road in which the use of ash and can filling was not contemplated, it was found that the property owners were very much put out to think that the city would change the construction of the road in front of their houses after they had had experience in traveling over roads constructed with ashes and cans. They threatened to petition over the Commissioner's head to the rest of the Commission for the same type of construction that the people nearer the city had.

Has Your 1922 Report Been Issued ?

IF cleanliness is next to godliness in personal conduct, it may be said that *time-liness* merits a similar distinction in municipal reporting. But it is a distinction too seldom earned. During the last months of 1922 and even in January, 1923, many a municipal report was published which covered the calendar year 1921. Such documents may possess historical value of a kind, but service to archeologists can hardly be regarded as the main purpose of an annual report.

Reports should be pictures of the city government, or of some department of that government, in action. They should be short enough to be read, prompt enough to be timely, and lively enough to be interesting.

The editors of THE AMERICAN CITY will be glad to have their attention called to any reports of municipal activities covering the year 1922 already issued, or soon to be issued, which meet these specifications outlined above.



Salt Lake City's New Bath-House

By Sam K. Smith

Assistant Secretary, Commercial Club and Chamber of Commerce, Salt Lake City, Utah

SALT LAKE CITY has recently completed a new reinforced concrete bath-house at a cost of about \$350,000. The building is 109 feet long and 212 feet wide, and the largest pool is 50 by 120 feet. Two thousand bathers can be accommodated in the main pool and the eight private pools of various sizes. The building is of Spanish Renaissance architecture with beautifully shaped windows and richly colored terra cotta trimmings. The water for the bath-house comes from the famous Warm Springs within the corporate limits of Salt Lake City. The waters of these springs possess the valuable properties belonging to saline sulphur springs. They issue from the mountainside in large volume at a point about one-quarter of a mile north of the Warm Springs bath-house. The water, which has a temperature of 95 to 104 degrees, is very efficacious in the cure of many diseases, notably paralytic rheumatism and scrofula.

The first Warm Springs bath-house was opened November 27, 1850, on the block lying immediately south of the present bath-house. In 1866 a second bath-house was built, under the direction of the Great Salt

Lake City Council. The present building was constructed under the supervision of the City Commission, with Commissioner Herman H. Green, head of the Department of Public Affairs and Finance, in direct charge.

The bathing and other facilities, briefly described, are as follows:

One large pool 50 by 120 feet, for the use of the general public.

One medium pool called the Private Pool, size 20 by 50 feet, to be used for private parties, or otherwise, as the management deems proper.

Seven small pools; size of each, 8 feet by 11 feet, for individual use.

There are twenty-six shower-baths scattered throughout the building. Thirteen of these are in connection with the large pool, four for the medium pool, seven for the individual pools (one to each pool), one for the masseur's room, and one for the masseuse's room. These are mainly for use in cooling off after a bath in the pool. Most of them are supplied with cold, fresh water only, although at least one shower in every shower-room will be supplied with both hot and cold water.

On the main floor close to the men's large locker- and dressing-rooms, quarters are provided for a barber shop and a masseur, with Turkish baths and a special physical exercise room in connection. On the floor above, convenient to the ladies' locker- and dressing-room, are located a beauty parlor and quarters for a masseuse.

The bath-house is heated by steam from its own plant, located in a boiler room at the rear. The plant includes three steam boilers, any two of which are capable of caring for extreme weather. Two exhaust fans are required for ventilating the inner

rooms adjoining the pools; but the pool rooms themselves are ventilated through roof ventilators which will take away the excessive vapor constantly arising from the water.

On the interior, tile is used quite extensively, as this material is capable of resisting the action of the water. All the shower-rooms, steam rooms, pool promenades and the walls of the pools themselves are white-tiled. Ornamental richly colored tiles with a small amount of marble are used also for the floors and trim in the main entrance vestibule and lobby.

Newark's Business Library Believes in Advertising

By John Cotton Dana

Librarian, Newark Public Library

THE Business Library which Newark, N. J., maintains in its business center is well used. But those who have charge of it are never satisfied, and after a dozen years of advertising they still "keep everlastingly at it," as an old and tried advertising agency long since advised. The card here reproduced was printed not long ago at the Main Library, of which the Business Library is a branch, and was placed in shops, stores, banks, offices, etc. It was used not only in connection with the blotters noted below, but also with binders for the Newark Telephone Book, of which the Business Branch bought 100, each bearing in gilt letters on the cover this legend:

Business Information
and
Addresses of Firms and Individuals
Supplied by Telephone
Market 7160
Business Branch of Public Library
15 Beaver Street,
Newark, N. J.

Not long ago we prepared ten blotters, each with a picture of an inside view of the Business Branch. The ten have been much praised as skilful advertising. Like the cards and the telephone covers, they have been placed in business offices. Here are a few of the phrases devised for these blotters:

2. Newark's Business Blotters: Newark

Business Information Supplied
Free of Charge
By The Business Branch of Your Public Library
You support it
To Answer Your Questions
—
Directory Information Statistical Information
Industrial Information Every sort of Information
On Beaver Street, Newark, N. J.
Open 9 to 6 daily Phone Market 7160
Call, Phone, Write or Send

THE ORIGINAL OF THIS BUSINESS CARD,
8 x 5 INCHES, WAS DISTRIBUTED TO 600
BUSINESS OFFICES IN NEWARK

has its own Bureau of Business Information and no city has a better one!

3. Salesmanship: Learn of it from the Books, Maps and Pamphlets in your city's Library for Business.

7. Mailing Lists can be made here by your own clerks. We show them how! Typewriter for your use. 2,000 directories.

These Business Branch blotters were distributed by hand through six of the largest office buildings in the city. One blotter and the business information cards were left in each of about 500 offices during June and July. In each case we wrote to the superintendent of the building for permission to do this, and without exception received a most courteous reply in granting us the privilege.

The Blade Grader in Earth Road Maintenance

By W. H. Root

Maintenance Engineer, Iowa State Highway Commission

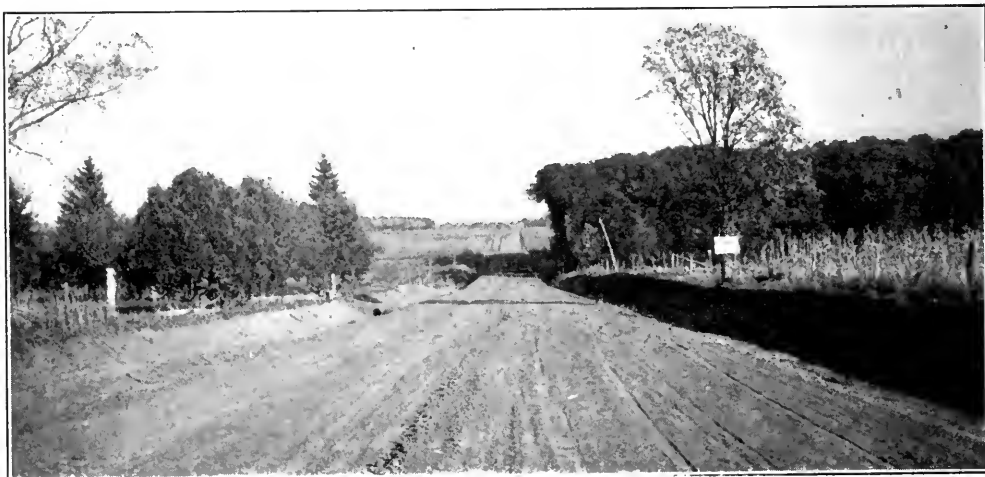
THE most useful and indispensable tool for the care of earth roads is the heavy blade grader with a blade length of from 12 to 16 feet, built heavy enough to do work that will require 30 to 50 draw-bar horse-power. A blade grader of this sort is adapted to various kinds of work. The three main classes of blade work are:

1. Heavy blade work on roads which have never been built, that is, widening out and building to standard cross-section trails which have never really merited the name "road"
2. Finishing work on new construction
3. Surface smoothing operations supplementary to regular patrol work

In 1913 the first 12-foot blade machine was shipped into the state of Iowa. Now there are at least 400 of these machines in the state. In our early blade grader work we erred in not doing a thorough enough job. We paid little attention to getting the fences back to the line and clearing the rights of way. We merely shaped up the road as we found it. From five to ten round trips were made, and the total cost per mile was only \$50 to \$75. Each

year, however, we have attempted to do more work and get a better road. We now require the fences and telephone poles to be moved back to the highway line before we start work. All trees, stumps and boulders are then cleared from the right of way. This work alone, in some parts of the state, runs as high as \$200 or \$300 per mile. All heavy weed growths are also cut and raked up and burned. After the right of way has thus been cleared, we are ready to start the blade work proper. The ditch line is staked out 18 feet each side of the center line, with lath. Enough lath are used so that two laths are always visible to the grader operator.

Each mile of road is a problem in itself. An ingenious grader operator will save lots of time and money by cutting down the number of round trips necessary. High side banks, narrow fills off center, and wet ditches are only a few of the things that make a first class blade grader job difficult and expensive. We much prefer a blade grader with a back sloper attachment, that is, an attachment which may



A PIECE OF PERMANENT GRADING IN IOWA, WHICH WAS FINISHED WITH A BLADE GRADER WITH BACK-SLOPE ATTACHMENT

Note that the shoulder is distinct and the crown of the road almost flat



A BLADE GRADER WORKING IN THE DITCH SHAPING UP AN OLD PIECE OF WORK

be bolted on the end of the blade so that the ditch bottom and back slope may be cut at the same time as the inside slope. A properly designed back sloper will cut the standard ditch and back slope when the main blade is cutting the standard inside slope. The back sloper should be adjustable so that the back slope can be flattened from $1\frac{1}{2}$ to 1, to 2 or $2\frac{1}{2}$ to 1 where extra dirt is needed.

On an average road we now make from ten to fifteen round trips with a single grader. Some counties still pull two 12-inch graders with one tractor, but this is not economical. Where this practise prevails, one grader of necessity must lie idle much of the time, and the turning is more difficult. The average cost of our blade work, including clearing, is about \$150 per mile. Often, however, we have work which runs as high as \$500 or \$600 per mile. In some hilly counties side-hill roads have been built where the material was mostly loose rock, with excellent results.

No two miles of road require the same treatment, and the cost of blading therefore varies greatly. The following figures, however, roughly represent the cost of the average mile:

| | |
|--|----------|
| 1 engineer, 25 hours at 75 cents..... | \$18.75 |
| 1 grader operator, 25 hours at 60 cents..... | 15.00 |
| 125 gallons of gas at 22 cents..... | 27.50 |
| Oil and grease | 3.00 |
| Depreciation on a \$6,000 investment, figuring a 3-year life of 100 working days per year— | |
| 2½ days at \$20 per day..... | 50.00 |
| Estimated repair 2½ days at \$5..... | 12.50 |
| Interest on investment (5 per cent on \$3,000), 2½ days at \$1.50 | 3.75 |
| Clearing right of way and incidentals..... | 19.50 |
| Total | \$150.00 |

Finishing Permanent Grading

The second class of blade grader work is the finishing of permanent grading. In grading operations in Iowa most of the dirt is moved with elevating graders and dump-wagons. We insist on a Mormon scraper's being kept constantly at work on the dump, but the best job that can be done in this way is necessarily rough. Therefore, we require every grading contractor to have a 12-inch blade grader in his equipment. This grader is pulled by a large engine, and the road is finished smooth close behind the rough grading. Often the same tractor that pulls the elevator is used evenings and at odd times to smooth up the work.

We also find that all new grading settles unequally after a few rains. The shoulders usually become low and ragged, the ditches start to fill, and the back slopes slough. It then becomes necessary to blade the job again. This blading is done by the county as a maintenance measure.

The back sloper is used. It fits into the ditch and back slope and builds the shoulder up in a uniform manner. The result is a workmanlike job, without perceptible waves, and the cost is only \$50 or \$75 per mile.

Supplementary Maintenance with Graders

We have the patrol system of maintenance in our state, but on practically all earth roads on the primary system we find supplementary maintenance with a heavy machine very necessary. For this work also

we prefer the heavy 12-foot blade grader. In a number of cases we have lengthened these blades to 16 or 18 feet in order to cover the road surface in one round trip. Often we are able to pick up old graders which have become worn and loose-jointed. These old machines can be bought for a song. We equip them with extension blades, put on heavy springs between the frame and the blade to take up the play, and thus obtain an ideal maintenance machine.

The most difficult maintenance problem is presented by a heavy soil road with heavy traffic, say, a dense yellow clay road

carrying 1,000 vehicles a day in all kinds of weather. It is obvious that before such a road has a chance to dry out so that it can be dragged, it has been hammered down until it is about as hard as a concrete pavement. The riding qualities, however, are not at all similar to those of a concrete pavement. It is rough and rutted and anything but a pleasure to travel over. It is also absolutely beyond the control of any light-equipped patrolman. Nothing but a heavy blade will ever put such a road back in satisfactory shape for travel.

ACKNOWLEDGMENT.—From a paper read at the American Road Builders' Association 1923 Convention.

Distinctive Lighting Standards for Residential Districts

Development Companies Can Materially Assist Cities in Ornamental Lighting Installations

THE lighting of residence streets in restricted neighborhoods with standards especially designed for the purpose, is becoming increasingly frequent. In business districts a simple, distinctive lighting standard is desirable, and the same holds true of many residence districts, but if a particular tone is to be given to a real estate development which is a part of the city, but to which is to be given a certain distinction, special lighting standards are frequently designed having a symbol or coat of arms cut into the bracket panel, as illustrated.

The well-known concrete standards of the West, bearing designs symbolic of the history of the country, have been described in these pages before. A lighting standard has recently come to our attention for use in a development in Springfield, Mass. This is illustrated herewith. It is distinctly unique, with its lanterns, silhouetted bay trees and sun-dial. All current is supplied from a four-duct underground conduit, thus completely doing away with overhead wires along the streets. We are indebted to the Colony Hills Trust for the photograph used in illustrating this article.

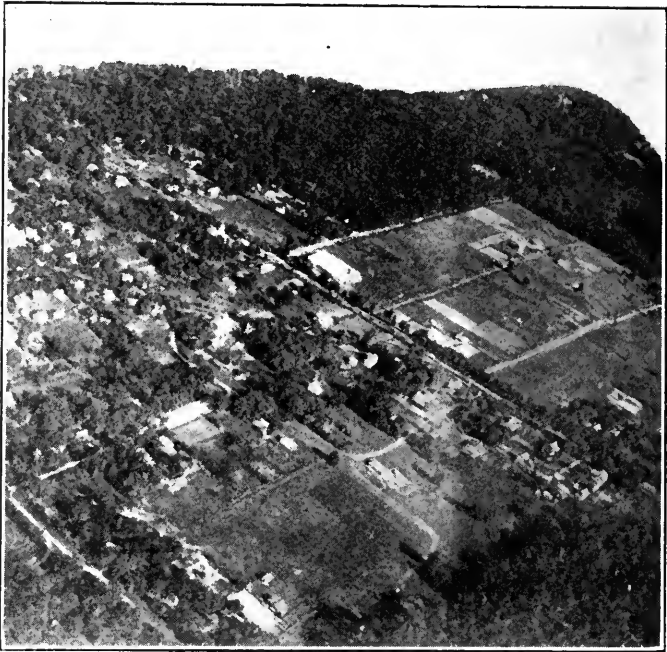


ATTRACTIVE LIGHTING STANDARD IN COLONY HILLS DEVELOPMENT, SPRINGFIELD, MASS.

plain. The tendency of the place to become a larger and more important summer resort while at the same time preserving its function as a minor agricultural center, has been evident for a number of years. And, as in every community where town planning is possible, the advantage of working to a definite development plan is enormous, both in saving of money and in getting vastly better results.

**Origin and Growth of
Community Action**

Forty years ago a narrow road followed the shore of Williams Bay on Lake Geneva, in southern Wisconsin, with only a single farm and a tiny group of summer campers to mark the spot where the village has developed. At the present time the beautiful wooded hills overlooking the bay are occupied by the homes of a permanent population of 500 and a summer population of about 3,000. Careful population estimates indicate that the next twenty years will show a growth to a total maximum summer population of 6,000. It is also anticipated that the advent of a winter sports colony will bring the winter population up to 3,000. It



WILLIAMS BAY FROM AN AIRPLANE

is for this future that the village development plan is being evolved.

The two larger events of the early history of Williams Bay were the advent of the railroad in 1888, and the location here of the great Yerkes Observatory of the University of Chicago in 1895. Community action, however, did not begin until 1900, when the first school district was organized, a little schoolhouse built, and one teacher engaged. In 1907 a library was acquired by gift, and definite community spirit began



GRAMMAR AND HIGH SCHOOL BUILDING, WILLIAMS BAY

with the successful attempt to secure land for the library building. In 1916 the little group of people which only sixteen years before had begun with a tiny schoolhouse and one teacher, floated a bond issue, built a \$33,000 school, and organized a complete school system from the elementary grades through high school, with a staff of ten teachers.

The following year a moving picture machine was acquired by the association which had been organized, and a community moving-picture show has been operated ever since. The profits produced from a five-cent admission have been used for the library and other public needs.

Through all this time the colony had been consolidating in feeling and action, but it had no municipal organization. In 1919, in the face of a vigorous minority protest, the village was incorporated and a new period in community action began. The streets were electric-lighted for the first time. Roads were improved, and plans made for a water-supply system. Finally, the demand that the future of Williams Bay be definitely planned resulted in the movement for the study of the physical development of the village, and the writer was engaged to direct this study.

A Town Plan

During all this time the importance of Williams Bay as a farm center had increased slowly, but there had been a great increase in the resort activities. It is then primarily as a summer and winter resort that Williams Bay has been planned. The resources of the village, both human and

monetary, are much greater than those of the average village or town of this size.

The studies include the street and road system; parks, playgrounds and planting; public utilities; community building and civic center; control of private property and zoning; and several miscellaneous items. The main project is that of completely re-vamping the water-front of the bay. The railroad is to be moved back, a water-front park developed, a new business section provided, a town square, a memorial avenue, and a community building constructed in a definite relation to the other features. The total scheme is ambitious on the face of it for a community as small as Williams Bay, but in order to carry it out a program has been drawn, tabulating the projects which may be taken up year by year for the next twenty years, each year's program being in conformity with the financial resources at that time. All of this has been suggested in a formal preliminary report, but the definite decision regarding the development plan and program is left to a series of community meetings to be held during the coming year. At the end of the year an official Plan and Program will be adopted.

It is believed that the preparation of a village plan in this manner by so small a settlement marks Williams Bay as unique among the small towns of the Middle West, if not of the entire country. And with the orderly, economical development made possible by following a town design and a development program, Williams Bay, with its exceptional resources, has the possibility of becoming one of the most beautiful and distinctive of all resort towns.

Fourth Annual Good Roads Essay Contest

A FOUR years' university scholarship with all expenses paid, is the prize offered to the high school boy or girl who submits the best essay in a national good roads essay contest. The essays are to be not more than 700 words, and the scholarship, known as the H. S. Firestone Four Years' University Scholarship, is valued at \$4,000—almost \$6 a word for the best paper.

Essays are to be written on the subject, "The Influence of Highway Transport Upon the Religious Life of My Community." All essays are to be submitted to high school principals or teachers not later than

May 1, 1923. Complete rules, all quite simple, will be sent upon request to the Highway Education Board, Willard Building, Washington, D. C. The Board is conducting the contest in cooperation with various educational organizations throughout the United States. Two young women and one young man already have won this scholarship in years past, and it has been sought by several hundred thousand high school students during the three years in which the contest has been conducted. In addition to the scholarship, numerous state prizes or honors are offered in connection with the contest.

Old Road Used as Base on Lincoln Highway

New Brick Surface in Sewickley, Pa., Laid on Old Pavement

FOR several generations the Beaver Road has been the main artery of travel to points west of Pittsburgh, even before it became part of the Lincoln Highway. Situated on the Beaver Road, about 12 miles west of Pittsburgh, is Sewickley, Pa., now one of the attractive residential suburbs of that city. In 1891, when this suburb was but a village, the Council paved its portion of the Beaver Road with brick.

The construction of this pavement in 1891 with a hand-mixed natural cement concrete base and vitrified brick wearing surface presented a big financial problem to the taxpayers of the community, but their judgment has been commended many times, as this pavement has carried with a minimum of maintenance expense the heavy traffic to which this important highway is subjected. During the past 31 years, practically all the

public utilities serving the residences and business houses on this street have been placed or replaced. The lack of proper repair of these service cuts and the wear and tear due to the abnormally heavy, fast-moving traffic of the last few years made reconstruction necessary on that section of the street in the business district.

Estimated costs of resurfacing with bituminous material over the brick and with placing new brick on the existing foundation showed that the first cost of repaving with brick would probably not exceed the cost of the bituminous resurfacing. The entire job of repaving was done by day labor by the city's forces. The removing and hauling of the old brick was not charged against the job, as the salvage value of the brick paid for the work. The price of \$2.50 per 1,000 was set for the brick on the street



BEAVER STREET, SEWICKLEY, PA., BEFORE THE PAVEMENT WAS REMOVED FOR THE LAYING OF NEW BRICK PAVEMENT ON THE ORIGINAL FOUNDATION



NEW BRICK SURFACE LAID, USING OLD ROAD AS FOUNDATION, IN BEAVER STREET
SEWICKLEY, PA.

in case the purchaser would do the hauling, or \$5 per 1,000 if the city delivered them. The cost of this part of the work was \$413.47, or 8 cents per yard. They received \$531.37 for those sold, making an actual profit of \$117.90 in addition to approximately 40,000 whole brick that were hauled to the city yards for gutters. The bats were either given away or hauled to the dumps, and all bricks sold and salvaged were entirely whole.

The crown of the street was very irregular, and some difficulty was experienced in securing a good job. Where uneven places were found in the foundation, they were built up with concrete or Tarvia cold patch. Granulated slag was used for the bedding coat at a cost of \$2.50 per car plus freight. The brick were hauled from the car, dumped on the street and then stacked. Two large rope mats were used to dump on, and very little spalling or breaking of the brick was caused by this method. The small percentage of chipped and broken brick were used in filling in ends of courses, around manholes, and similar work. A small lawn roller was used to compact the cushion, and a 5-ton tandem roller to roll the brick.

The asphalt was heated in a 300-gallon asphalt kettle, and squeegee pots of 3-gallon capacity were used to apply the material. It was found necessary to go over the street with these pots three times in order to properly fill the joints. A thin layer of sand was spread over the pavement after asphaltting and allowed to remain about a week, although the street was opened to traffic immediately after the asphalt and sand were applied. The merchants were all pleased with the resulting noiselessness of the new street, although at the time they were very skeptical of the methods employed, especially of the use of 3-inch brick.

The cost of truck and team in the following table is very low. These are the actual costs of each, however, figured on a basis of all costs of repairs, feed, parts, tires, etc., but, of course, do not include the cost of the driver, which is figured in the labor costs. The type of paving originally figured on for the repaved street was a 2-inch bituminous concrete. The bid received for this work was \$2 per yard, to which 50 cents was added for maintenance during the 15 years, making a total of \$2.50 per yard. The actual cost of brick construction on which

no maintenance cost was figured was \$1.285 per yard, or an estimated saving of \$6,298.70 on the job, in which is not included the item

of taking up the old brick or the profit on the sale of these brick for less strenuous service in building construction.

| | | | |
|---|---------|------------|----------------------|
| <i>Hauling Slag for Cushion</i> | | | |
| 229 hrs. labor, 30c. to 45c. | \$85.60 | | |
| 63 hrs. truck, 50c. | 31.50 | | |
| 30 hrs. team, 25c. | 7.50 | | |
| | <hr/> | \$124.60 | \$.0243 per sq. yd. |
| <i>Preparing Slag Cushion</i> | | | |
| 12 hrs. foreman, 42.7c. | 5.12 | | |
| 243 hrs. labor, 35c. to 45c. | 92.95 | | |
| | <hr/> | 98.07 | |
| Slag | 44.02 | | |
| | <hr/> | 142.09 | .0274 per sq. yd. |
| <i>Hauling and Stacking Brick</i> | | | |
| 34 hrs. foreman, 42.7c. | 14.52 | | |
| 908 hrs. labor, 35c. to 50c. | 326.95 | | |
| 74 hrs. truck, 50c. | 37.00 | | |
| 122.5 hrs. team, 25c. | 30.62 | | |
| | <hr/> | 409.09 | .0789 per sq. yd. |
| 190,000 3-Inch Vertical Fiber Block | | | |
| At \$25.50 per M., loss 3,862 not used. | | 4,746.52 | .9160 per sq. yd. |
| <i>Laying Brick and Rolling</i> | | | |
| 48 hrs. foreman, 42.7c. | 20.50 | | |
| 734 hrs. labor, 35c. to 50c. | 271.25 | | |
| | <hr/> | 291.75 | |
| 4½ days roller | 99.60 | | |
| | <hr/> | 390.75 | .0754 per sq. yd. |
| <i>Asphalting</i> | | | |
| Hauling asphalt, heating and applying. | | 9.45 | |
| 46 hrs. foreman, 42.7c. | 19.64 | | |
| 461 hrs. labor, 35c. to 45c. | 166.85 | | |
| 2 hrs. team, 25c. | .50 | | |
| | <hr/> | 186.99 | |
| 83 drums or 5,000 gallons asphalt. | | 473.66 | |
| Asphalt kettle 6 days at \$7.50. | | 45.00 | |
| | <hr/> | 715.10 | .1380 per sq. yd. |
| <i>Miscellaneous Work</i> | | | |
| 97 hrs. labor, 35c. to 50c. | 36.50 | | |
| 7 hrs. truck, 50c. | 3.50 | | |
| 13 hrs. team, 25c. | 3.25 | | |
| | <hr/> | 43.25 | |
| Sand covering, 474 bu. at \$.10 | | 47.40 | |
| Gloves, spikes, thermometers, wear and tear on tools, etc. | | 42.50 | |
| | <hr/> | 133.15 | .0250 per sq. yd. |
| Total | | \$6,661.30 | \$1.2850 per sq. yd. |
| <i>Taking Up and Hauling Old Bricks (not charged against job)</i> | | | |
| 60 hrs. foreman, 42.7c. | \$25.62 | | |
| 979 hrs. labor, 35c. to 50c. | 350.10 | | |
| 55 hrs. truck, 50c. | 27.50 | | |
| 41 hrs. team, 25c. | 10.25 | | |
| | <hr/> | \$413.47 | \$.0800 per sq. yd. |

NOTE.—Received for old brick, \$531.37; actual cost of work, \$413.47; profit, \$117.90. 40,000 brick delivered to yard for our own use.

National Safety Council Holds Campaign Against Public Accidents

The National Safety Council with local safety organizations in forty cities is now engaged in a national campaign against automobile accidents, the necessity for which is found in the statement of statisticians that over 12,000 people died as the result of automobile accidents during 1922. The campaign is solely one of education. The program, which is already in effect in fifty cities, includes motor drivers' schools, the cooperation of all civic organizations, and the teaching of safety in

the schools. Education in the fundamentals of accident prevention is already under way in the public schools of 276 cities throughout the United States.

Three field secretaries are now engaged in organization work about the country, two in the general field and one in the educational end of the work. The progress attained and the extension of the campaign to smaller communities will be considered at the National Safety Congress to be held in Buffalo, N. Y., October 1 to 5.

The Aeration of Water

Methods of Removing Odors and Tastes from Drinking Water

By **George W. Simons, Jr.**

Chief Sanitary Engineer, Florida State Board of Health

AERATION means an airing, or renovation by means of air, and as applied to water refers to the treatment of water with air streams to remove loosely combined and objectionable tastes or odors from water. Just as a house is opened and aired to remove the musty odor of a summer's closing, the odor-laden water is submitted to an airing.

The objectionable tastes or odors in waters may be due to one or several causes, to dissolved gases, to microscopical organisms, or to a disintegration of organisms with the liberation of certain peculiar oils. As a general rule, these objectionable tastes

and odors are in loose combination, and a thorough agitation and airing will readily eliminate them as nuisance factors.

Hydrogen sulphide is one of the common gases frequently found dissolved in deep-seated waters of the South and Southeast; it is objectionable in both taste and odor. It is dissolved by the water at great depths under considerable pressure; when the water reaches the ground through an artesian or deep pumped well, the extreme pressure holding the gas in combination is relieved and the lightly combined gas easily released. The gas smells like spoiled egg in its raw state, but after very



TYPES OF AERATORS IN COMMON USE

1 and 2. Two types of aerators used in Jacksonville, Fla. 3. The aerator at the iron and manganese removal plant, Lowell, Mass., water-works. 4. Aerator at Daytona, Fla.

slight aeration this smell and the disagreeable taste disappear.

Aeration is not a purification or rapid oxidation process, as is sometimes thought; it is simply a mechanical process of replacing one gas with another, or driving out an objectionable one by introducing air. In the 23rd Annual Report of the Massachusetts State Board of Health is found an admirable treatise on the "Aeration of Water for the Removal of Tastes and Odors," by the late Dr. Thomas Drown. In this article (still a masterpiece) Dr. Drown shows that the aeration process is solely one of mechanical removal and not one to hasten the oxidation of organic matter, a theory which many were then prone to believe. As Professor George C. Whipple states in "Microscopy of Drinking Water," "The object of aeration is to provide opportunity for an interchange of gases between the water and the air, so that oxygen may be dissolved and carbonic acid and odoriferous gases such as hydrogen sulphide and the like be liberated."

That aeration does accomplish a ready liberation of dissolved gases can be attested by one familiar with the treatment of a hydrogen sulphide water. In 1907 M. C. Whipple showed by an interesting series of experiments the diminution of hydrogen sulphide in the water content by means of aeration. A water having an initial hydrogen sulphide content of 15.2 p. p. m. and a faint odor, was reduced to 2.6 after a two-seconds aeration period. In this same period the dissolved oxygen was increased from zero to 75 per cent of saturation—an increase of 90 per cent.

Aeration is a simple process; the average individual inspecting a large water treatment plant might easily fail to recognize the aeration part of the plant, one of the principal cogs in the wheel. The beautiful fountains playing their graceful jets into the large reservoirs of our metropolitan water-supplies are merely aeration processes. At Springfield, Mass., Albany, N. Y., Portland, Ore., and other places these spouting fountains of water can be observed continuously aerating the algae-infected lake or river supplies. In

each of these instances aeration is merely a part of the more extensive subsequent treatment. At Lowell, Mass. the aeration process is a part of the deferrization plant; at West Palm Beach, Fla., and other places the aeration process not only removes the algae tastes but also acts as an adjunct to the alum mixing. On a deep ground water saturated with hydrogen sulphide, aeration is, generally speaking, the sole process of treatment. At Jacksonville, St. Augustine, Daytona and other places in Florida, the aeration process is used to liberate the objectionable sulphuretted gas. Fortunately, in these sections of Florida the wells are self-flowing and have ample head available above ground to aerate the water; otherwise aeration would be more or less expensive.

The aeration of water is accomplished in several ways:

1. By compressed air—forcing the air into tanks of water or by air lift into wells. This method has been used rather extensively in some places, but in Florida has not proved entirely efficient and satisfactory as a gas remover, and its operation is expensive.

2. By the jet or fountain. This is one of the most popular and simple methods available. It is used at most of the water purification plants, also at many of the larger storage reservoirs resorting to aeration as the sole treatment. This method is effective because it succeeds in forcing the water through the air medium in very fine sprays, affording an intimate contact of air and gas and thereby driving out the objectionable gases.

3. Passing water over shelves in fine, thin sheets is another widely used and popular method. It enables the air to gain access to every atom of water and thereby eliminates the objectionable qualities. The cost of pumping and loss of head encountered in this method are items for consideration. A plan of this type is used in several of the private plants in Florida, also at Leipsic, Ohio, and other places.

4. The aeration of an artificial cascade, especially where free-flowing wells are available. This provides a violent agitation of water with simultaneous aeration. This method was used in Jacksonville at one time.

5. The multiple injector type, such as used in the purification plant of the city of Oshkosh, Wis.

6. By the tray method, as used at Emporia, Kans., and Excelsior Springs, Mo. In this case the water flows over trays into a reservoir.

The Economic Disposal of Sewage Sludge

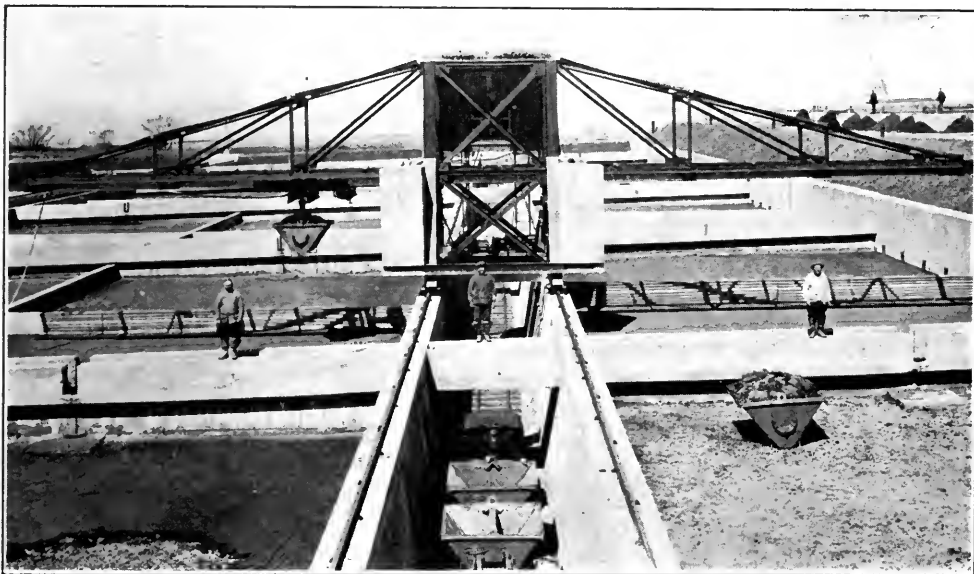
By N. Adelbert Brown

Engineer in Charge of Sewage Disposal, Rochester, N. Y.

A CLARIFIED, stabilized effluent only partially solves the question of sewage treatment: not until the satisfactory disposal of the sludge is arranged can the problem be considered as solved.

The location of the Irondequoit Plant at Rochester, N. Y., seven miles from the center of the city, on land having many natural gulleys, was chosen with the idea of furnishing available dumping ground for sludge for many years. Doubtless this was

The soil within a radius of five miles of this plant is a light sandy loam and is used principally for peach, pear and cherry orchards and truck gardening. Many farmers availed themselves of our offer, but the reports as to the value of this fertilizer were not encouraging. We felt that these reports were pessimistic in order to influence the price. In the spring of 1919, however, a charge of 50 cents per load of $1\frac{1}{2}$ yards was established with the farmer



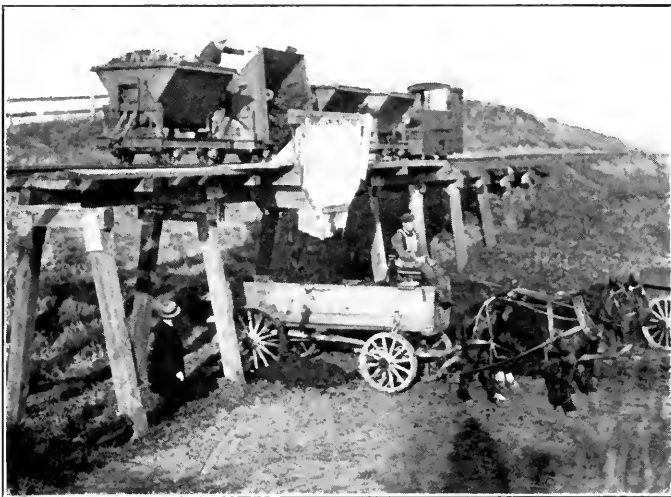
GANTRY CRANE FOR PICKING UP INDUSTRIAL RAILWAY CAR BODIES LOADED WITH SLUDGE TO BE TAKEN TO DUMP

a practical possibility, but it was also a most uneconomic treatment of a valuable material.

When the first sludge was drawn at this plant in the spring of 1918, the plan of interesting the farmers of the surrounding territory in its use as a fertilizer was considered. To arouse this interest, we went among the more progressive farmers and offered them without charge an unobjectionable fertilizer with a nitrogen content of 1.25 to 1.75 per cent.

loading his own wagon at the dump. This increase in price only served to stimulate the demand, and since that year the farmers have purchased all the sludge removed from a sewage flow averaging 36,000,000 gallons per day. Even those who refused to give favorable reports continue to buy year after year.

The sludge is drawn from the Imhoff tanks with a moisture content of 79 to 86 per cent. An average of thirteen days on the drying beds reduces this to from 50 to



SLUDGE DUMP OF ROCHESTER, N. Y., SEWAGE TREATMENT PLANT EMPTYING INTO FARMER'S WAGON

60 per cent and renders it easy to handle with forks. The drying beds are separated by transverse concrete channels 8 feet deep, which carry an industrial railway. Rails for a gantry crane are laid on the channel walls. In removing the sludge, a train of yard-and-one-half Koppel cars enters the channel, the gantry crane lifts the bodies and sets them on the beds, the cars are filled by laborers with forks, and the gantry replaces the bodies on the trucks. The train is then hauled to the sludge dump.

The farmers saw a loss in this second handling of the sludge and offered a higher price if we would load directly into their wagons. In 1920, we erected a trestle at our dump, and now we can empty our cars directly into wagons.

As we begin drawing sludge in March or April and continue until November, the

supply is ready during the planting and harvesting periods. When the farmers' wagons are available, we load $1\frac{1}{2}$ cars into the wagon for 75 cents. At other times the sludge is dumped, and this is always open to the farmer to load for himself at 50 cents per load. The accompanying photographs were taken in November, 1922; six teams were in line at the trestle and three were loading at the dump.

Sludge is hauled by teams and trucks for distances of five miles. It is used with excellent results on small fruit and all

truck gardening except root crops. In many cases it has been used with satisfaction on hay and grain as a top dressing.

This season we have had several inquiries for prices on car-load lots to be delivered up to thirty miles. Methods of loading and freight rates have prevented any sales in this way. As under the present method the demand equals the supply, we have not felt justified in expending funds to provide a car-loading plant.

With an educational campaign, this disposal of sludge can be carried out in most localities. While we make no claims of great financial returns, we at least dispose of the accumulating sludge, which at this plant amounts to 20,000 yards per year. The continued use of this fertilizer for several years by intelligent farmers convinces us, more than any laboratory analysis, of the economic value of this disposal.

The High Maternity Death Rate in the United States

In her annual report to the Secretary of Labor, Miss Grace Abbott, Chief of the Children's Bureau, states that the death rate among mothers from causes connected with maternity was higher in the United States birth registration area in 1920 than in any foreign country for which recent figures are available, and that yearly statistics from 1915 to 1920 show an increase rather than a decrease in the American rate. Infant mortality has decreased, but the rate here is still not as low as the rates for five other

countries. Every state must now face a general demand, the report says, "that, whatever the source or character of the opposition, community measures of proved value must be utilized for reducing the present unnecessary loss of life." The Maternity and Infancy Act authorizes aid to the states when matched by state expenditures "for the promotion of the welfare and hygiene of maternity and infancy." For further information, apply to the Children's Bureau, Washington, D. C.

Forward Steps in Municipal Affairs

Mayors

Newburyport to Have a River-Front Park

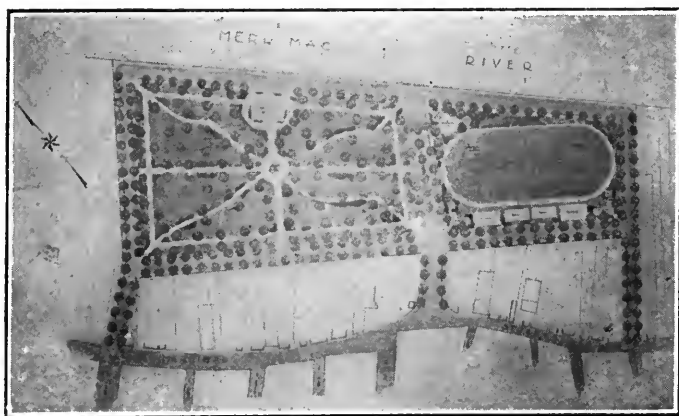
NEWBURYPORT, MASS.—Parks are one of the best assets any city can have. Instead of such breathing-places, many cities and towns have waste land that is unsightly and of no use except as dumping-ground for all kinds of discarded debris. Our city was no exception.

Newburyport is bounded on the north by the beautiful Merrimac River, and, strange as it may seem, the residents of Newburyport could not get to the river to view its beauties without being trespassers on private property. At the south end of the city, and below the railroad and vehicle bridges, are the wharves and that part of the river that is used for commercial purposes, such as coal wharves, electric light plant, lumber yards, planing mills, tugboats, etc. But at the upper or north end of the city, above the bridges and Merrimac Street, are stores and residences with a few factories, all located near Merrimac Street. The rear of the stores, residences and factories, along the river, was used as a dumping-ground for ashes and all kinds of waste material, until land was made for about 1,200 feet at the rear of these buildings towards the river, more land being made each year, until there was approximately 18 acres in all.

Each house on the

street owned to low-water mark, and many of the lots were only 50 feet front, more of them a few feet more, until some of the fronts were a little above 100 feet, making lots 50 to 100 feet front, from 1,200 to 1,500 feet deep, and none wide or large enough to be used for commercial purposes. In many cases the land at the rear was inaccessible to the owners on account of the buildings on the street taking up all the land except a footpath to the rear. Other lots had driveways for teams to the rear, so that the whole lot became a public dump. These dumps were not properly cared for and every conceivable kind of cast-off material was left in plain sight of all who passed over the railroad bridge, going or coming from all sections east of Newburyport on the Boston & Maine railroad, and this condition existed for generations.

A few years ago, the possibility of improving the whole plot and making it into a public park was suggested by a private citizen, and he had the whole plot surveyed, showing just what land each person owned. The plan was sent to one of the professors of a well-known college where landscape



PLAN OF NEWBURYPORT'S NEW PARK

architecture is taught, and they in turn made a fine plan showing the layout to contain baseball diamonds, football field, band-stand, swimming pools, tennis courts and all kinds of paraphernalia to entertain and furnish exercise for the young and a breathing-place for the older people.

What makes this plot more valuable to the people is that it is just abreast of where the great body of the working people live, and it is bound to be of great service to the citizens of Newburyport. When the whole park is completed, it will be one of the finest recreation spots for miles around, and will have transformed what has been the most unsightly place in the whole city to one of usefulness and beauty. It will give to our citizens an opportunity to enjoy the beauty and comforts of the river during the warm season.

After the plans were made public, public hearings were held, and the whole plan was abandoned until the beginning of 1922, when the Mayor suggested it in his inaugural, and the City Council adopted his suggestions. The whole lot was taken by eminent domain, and a commission of three men was appointed by the Mayor and Committee on Public Welfare of the City Council, who under our charter act as Park Commissioners.

A commission of three men who are in the real estate business put a valuation on the different parcels of land, and in many cases the award was accepted and deeds given to the city. A few have not yet accepted the awards as made, but it is not thought that any lawsuits will be brought to obtain deeds from all the people whose land has been taken.

After the land was taken by the city, plans were submitted to the Honorable Harbor and Land Commission of Massachusetts, and a permit was given to complete the whole as indicated on the plans, which showed the retaining wall along the river to be constructed by driving piles about 5 feet apart, down to within 12 to 15 inches of the mud. On the land side of these piles is to be bolted a 3 by 12 hard pine plank. These piles and planks serve for a tow for the riprap that is to be laid on a crushed stone or coarse gravel slope of about 2 to 1.

The advantages of this kind of construction are, first, its durability, second, its economy, and third, its safety; if it were an abrupt wall from 10 to 12 feet high, and

at high tide a child fell into the water, rescue would be difficult, but with this kind of construction, a child can walk up the slope back to land.

M. CASHMAN,
Mayor.

Fire Departments

Help Cut the Fire Losses by Being Careful

FARRELL, PA.—Having been appointed Fire Chief on January 2, 1922, I found it my duty to eliminate all fire hazards within my jurisdiction. After a careful study and survey of the conditions, I came to the conclusion that the proper method to follow was to conduct a house-to-house inspection. Before the inspections could be started, an ordinance had to be passed in Council, providing for the inspection of all buildings, premises and public thoroughfares in Farrell; for ascertaining and correcting conditions liable to cause fire; making it unlawful to accumulate combustible material or to obstruct fire-escapes or other passageways; and providing penalties for violation of the ordinance.

During the time it took to prepare and pass the ordinance I requested the Bureau of Fire Protection of the Department of State Police at Harrisburg to send one of its fire inspectors here. In response to this request, Inspector Walter Gibbons spent one month in Farrell, during which time all stores and school buildings and a number of boarding-houses were inspected. Among the improvements accomplished was the removal of several old buildings that were beyond repair, and the repairing of many other old buildings which were very dangerous fire hazards.

At this time fire drills were held in the schools, and short talks were given in the grade schools on fires and how to prevent them. It was found there is no better way to educate the parents than through the school children. Home inspection blanks for school children were given out, which were returned to the department and were a great help to the inspectors later in the year.

The house-to-house inspection was started on September 16, 1922. All hazards found

by inspectors were reported to the office, where a record is kept of all inspections. When a hazard was reported, the office notified the person who was responsible, and a limited time was given in which to correct the condition. The inspectors found a great many hazardous cellars, garages and attics. One of the most dangerous hazards found was the rubber hose used to connect gas stoves in bedrooms and hot plates in cellars and wash-houses. Unoccupied houses with doors unlocked and windows open were found in many different parts of the borough. Such buildings become a dangerous hazard, on account of young boys going in to have a smoke and carelessly handling matches and cigarettes.

During Fire Prevention Week in October talks were given in the schools, and drills were held in each building. The daily papers ran articles on fires and how to prevent them. Fire prevention circulars were distributed by the Boy Scouts to homes and stores. A bulletin board was installed near the fire station, and on it were posted interesting items on fires and pictures of fires that near-by cities had had, with the causes.

During the months of November and December, 1922, and January, 1923, the result of the inspection began to show. During November the department did not receive a call; in the same month in 1921 there were 9. In December 3 calls were received, with a loss of \$50, whereas in December, 1921, there were 4, with a loss of \$2,000. In January, 1923, 3 calls were received, as compared with 9 for January, 1922. Most of the calls in previous years have been from dwellings, and these calls have been cut down about 50 per cent since the inspection work was started.

Farrell has a population of about 17,000 and is a cosmopolitan borough, founded in 1900. The Fire Department consists of the Chief, the Assistant Chief, and four firemen. All the firemen were new men at the same time that the Chief was appointed. The two-platoon system is being used in the department. The fire apparatus consists of one American-LaFrance Type 75 pumper and one American-LaFrance city service truck. Fire calls are received by phone. The citizens will be given an opportunity this fall to vote on a bond issue covering the installation of a Gamewell fire alarm system.

I will say in closing: Don't blame the

people for being careless and for having fires; blame the fire officials for not instructing the people in the proper way of preventing fires. I feel safe in saying that it will not be long before it will be the duty of every city to provide the proper method of instructing its citizens in fire prevention rather than just answering fire calls when received at the station.

JOHN MAXWELL,
Chief, Farrell Fire Department.

Finance Departments

How Dayton Issues Licenses

DAYTON, OHIO.—This city has a new system of issuing licenses, operated under the direction of the city accountant of the Department of Finance.

Until recently, the certificates of license were kept in a book, a carbon copy of the certificate remaining in the book after the license was issued. A separate book was required for each kind of license; one book was devoted to bicycles, one to junk dealers, and so on. At the end of the day, it was necessary to run through these various books in order to ascertain the number of licenses and the amount of money taken in.

The improved system consists of a single "Standard Register," having three rolls, one remaining in the register as licenses are issued. When a license is issued, one copy of the certificate is handed to the person buying the license and one copy remains on file. The secret roll in the register must show the same writings as the two certificates.

As the certificates are issued, the official copies are kept separated. The bicycle licenses are placed on the bicycle file, the junk dealers' licenses are placed on the junk dealers' file, and so on. Also, the licenses are issued serially to correspond with the numbers on the license tags. Thus, in issuing a bicycle license, the clerk, on referring to the bicycle file, will ascertain the next certificate number, issuing the corresponding tag number.

At the end of the day, it is a simple matter to refer to each file to ascertain the money taken in on each kind of license. The

clerk will make out a daily "pay in" in triplicate, one copy for the treasurer, one copy for the accountant, and one copy to remain on file with the clerk.

On the form of the certificate reproduced herewith it will be noted that the person receiving the license need not be under any misapprehension as regards the authority under which the license was issued or the schedule of prices. The check on the left margin of the certificate will indicate the

kind of license purchased, the ordinance number, the rate and the amount paid.

These registers are in use in a number of other cities and are reported as being of service also in controlling payments for city water, in issuing building permits, in giving a dependable purchase order system, and in controlling issues from storehouses by park and playground commissions.

R. J. SESSIONS,
Finance Department.

DEPARTMENT OF FINANCE

CITY OF DAYTON, OHIO

Receipt No.

Certificate of License

SCHEDULE OF LICENSES

| Ordinance No | NAME | TIME | RATE | REDUCED RATE |
|--------------|-------------------------------|---------------------------|---|---|
| 8430 | Bicycle | Mar. 1st to Feb. 28th | \$.50 1 yr. | \$.25 Sept. 1st to Feb. 28th |
| 8430 | 2-Horse | Mar. 1st to Feb. 28th | 3.00 1 yr. | 1.50 Sept. 1st to Feb. 28th |
| 8430 | 1-Horse | Mar. 1st to Feb. 28th | 2.00 1 yr. | 1.00 Sept. 1st to Feb. 28th |
| 8430 | Buggy | Mar. 1st to Feb. 28th | 1.50 1 yr. | .75 Sept. 1st to Feb. 28th |
| 10762 | Transient Peddler | | 1.50 1 day | |
| 10762 | Basket Peddler | Nov. 1st to Apr. 30th | 7.75 6 mo. | 4.00 Feb. 1st to Apr. 30th |
| " | " | May 1st to Oct. 31st | 7.75 6 mo. | 4.00 Aug. 1st to Oct. 31st |
| 10762 | Wagon Peddler | Nov. 1st to Apr. 30th | 15.25 6 mo. | 7.75 Feb. 1st to Apr. 30th |
| " | " | May 1st to Oct. 31st | 15.25 6 mo. | 7.75 Aug. 1st to Oct. 31st |
| 10762 | Auto Peddler | Nov. 1st to Apr. 30th | 25.25 6 mo. | 12.75 Feb. 1st to Apr. 30th |
| " | " | May 1st to Oct. 31st | 25.25 6 mo. | 12.75 Aug. 1st to Oct. 31st |
| 9590 | Junk Wagon | May 1st to Apr. 30th | 5.00 1 yr. | 2.50 Nov. 1st to Apr. 30th |
| 9590 | Junk Carr | May 1st to Apr. 30th | 1.00 1 yr. | .50 Nov. 1st to Apr. 30th |
| 9590 | Junk Dealer | 1 year from date of issue | 50.00 1 yr | (No Reduction) |
| 10787 | Taxi Driver | Jan. 1st to Dec. 31st | 2.50 1 yr | 5.00 June 1st to Dec. 31st |
| 10787 | Taxi Operator | Jan. 1st to Dec. 31st | 10.00 1 yr. for 1st car | 2.50 June 1st to Dec. 31st |
| 12694 | Pool or Bowling Room | Jan. 1st to Dec. 31st | 5.00 1 yr. for each add'l car | Reduced proportionately by month to Dec. 31st |
| 12694 | Pool Tables or Bowling Alleys | Jan. 1st to Dec. 31st | 5.00 1 yr. | |
| 9572 | Dance Halls or Roller Skating | 1 year from date of issue | 1.00 1 yr. for each table or Alley | |
| 9572 | Circus | | 25.00 to 75.00 1 year or 1.00 to 10.00 1 day | 1/2 fee for each additional day |
| 9572 | Theatres | Jan. 1st to Dec. 31st | 75.00 to 300.00 1 day or 25.00 to 100.00 1 year or 2.00 to 10.00 1 day | |
| 9572 | Concerts and Entertainments | 1 year from date of issue | 10.00 to 100.00 1 year or 1.00 to 10.00 1 day | |
| 10892 | Moving Van | June 1st to May 31st | 2.00 1 yr. for 1st Van, \$1.00 1 yr. for each add'l Van. | |
| 10716 | Second hand Auto Dealers | July 1st to June 30th | 25.00 1 yr. | |
| 10978 | Auction | | 10.00 to 50.00 for 30 days for 1st investigation, plus 10.00 for each additional investigation. | |
| 5823 | Cement | 1 year from date of issue | 1.00 1 yr. | |
| 11653 | Auto Bus (Within City) | Nov. 1st to Oct. 31st | 6.00 per capita up to 25 passengers 8.00 per capita more than 25 passengers | |
| | Coal Weighers | | .50 each | |

For and in Consideration of \$_____ to me paid, and by virtue of the authority in me vested, I as DIRECTOR OF FINANCE OF SAID CITY, hereby grant permission to

_____ residing at _____
for _____ drawn by _____

subject to the
same of the City

1923

ordinances covering
of Dayton, Ohio

This License shall be in force for the term of _____ months, beginning _____ 192____ and ending _____ 192____, revocable, however, at the discretion of the Director of Finance.

In Testimony Whereof, I have hereunto set my hand and affixed the seal of said Department this _____ day of _____ A. D., 192____

Director of Finance.
By _____ Clerk.

Departments of Education

School Dental Hygiene

NEW HAVEN, CONN.—It is still very little realized by most people that the teeth play a very important part in determining general health. Careful investigations have shown that uncorrected dental defects in children may seriously injure the growth and development of the body and greatly lower the child's resistance to communicable disease. From the standpoint of school progress, records show that toothache is one of the most frequent causes of absence from school and that neglected mouth conditions are responsible for much of the retardation in school work.

A forward step has been taken in dental hygiene in the New Haven schools by the training of women specialists for purely preventive work. These dental hygienists clean and polish all surfaces of the teeth and give instructions to the children in mouth hygiene and the proper use of the tooth-brush. Experience shows that this treatment is most helpful in securing that important condition—healthy gums, and prevents much dental decay.

The following is a report of the work accomplished by two dental hygienists of the Department of Health during the year 1922:

| | |
|--|-------|
| Total number of prophylactic treatments..... | 3,337 |
| Cavities found in permanent teeth..... | 4,175 |
| Cavities found in temporary teeth..... | 5,949 |
| Treated for toothache..... | 768 |
| Referred to private dentists..... | 1,222 |
| Talks and tooth-brush drills given..... | 3,640 |
| Condition of teeth— | |
| Clean | 16 |
| Fair | 9,04 |
| Dirty | 2,367 |
| Use of tooth-brush— | |
| Daily | 35 |
| Occasionally | 910 |
| Never | 2,390 |

MARGARET J. BARRETT, R. N.,
Director.

Police Departments

Effective Work of Policewomen

ST. LOUIS, Mo.—The Policewomen's Bureau of the Police Department of St. Louis is making a splendid record. It was

created in 1916, with a staff of four women. In 1918 eleven more were added and a woman supervisor was placed in charge. Several months later the Women's Bureau was placed under the jurisdiction of the Chief of Detectives. The investigations conducted by this Bureau cause the arrest of persons and the issuance of warrants charging them with various offenses, among which are the following: assault and battery, assisting in burglary, kidnapping, petit larceny, violating the Mann white slave act, violating postal laws, abandoning wife and children, deserting the Army and the Navy, and such minor offenses as begging, disturbing the peace, fortune telling, incorrigibility, etc.

The policewomen have investigated almost every kind of case in which the moral and physical welfare of young girls is involved. Their work includes the apprehension of fake doctors and fake specialists, the investigation of letters of inquiry from other cities, the patrolling of the congested downtown districts, particularly department stores and motion picture shows, protective and preventive work with young girls who flock into the city, the assisting and directing of travelers and other work in connection with the Travelers' Aid. The reports of all missing persons are forwarded to the Policewomen's Bureau, and to them is assigned the work of locating these persons. Intensive work is given to the investigation of missing and runaway girls, and special effort is directed to the arrest of persons who violate the law by contributing to the delinquency of these girls.

Two of the policewomen are assigned to assist in the work connected with the Venereal Clinic and the Mortality Squad. Policewomen assume various disguises and take various positions in order to accomplish results. Some thrilling stories result from their experiences. A good deal of their work is transacted at the office of the Division at Headquarters, where numerous persons call daily for advice in locating lost relatives, in dealing with young girls, in finding wife deserters, and in other problems where aid and comfort are needed. A great number of these persons are handled through other social agencies, which constitute clearing-houses for the Bureau—a service which the Bureau also performs for them. The record for the last nine months shows: 1,966 arrests made by police-

women; 2,833 visits of inspection to railroad stations, dance halls, picture shows, cafés and stores; 1,393 letters of inquiry investigated and answered; 2,605 missing persons located; 2,945 cases referred to charitable, corrective and protective organizations; court attendances, 648.

The Bureau confines its activities to real police duty, leaving constructive work to the many highly organized social agencies from which the Bureau receives most cordial cooperation.

JOHN A. BRANDENBURGER,
Detective Sergeant in charge of the Policewomen's Bureau.



Garber & Woodward, Architects

CLOCK TOWER, EAST SIDE HIGH SCHOOL, CINCINNATI, OHIO



NEW MARKET BUILDING UNDER CONSTRUCTION IN NORFOLK, VA.

New City Markets in Norfolk and Roanoke

Norfolk's Modern Market

NORFOLK, VA.—Realizing that the average city market, with its food exposed to flying dust, flies and street germs, its inadequate equipment for keeping floors, stalls and storage spaces sanitary, and its generally unsightly and unattractive appearance to the customer, is not in keeping with modern ideas, the present administration of the city of Norfolk is building a new market house which in design and equipment seems to leave nothing to which modern sanitary science could add.

Not only has every effort been made to conserve the health of the community, but it is the intention of the City Manager so to administer the market that the municipality will be in a position to give its citizens the benefit of lower prices, which should prevail, but fortunately do not always prevail, in municipal markets. In the accomplishment of both these objects lie the real reasons for public markets.

Norfolk's new market structure will cover a lot 140 by 230 feet. The side aisles will be about 25 feet wide and the center section about 50 feet wide. The entire space will be enclosed, and no products will be sold except those stored within the building, all of which will be under glass. There will be 100 stalls for handling foodstuffs of every character. The center portion will have a ceiling height of 50 feet, the walls

being carried above the side aisles to give an abundance of light through clear story windows. Every opening in the building will be screened to keep out insects. All the furnishings will be installed by the city, so that there will be absolute uniformity in design and layout.

Stalls will be located around the four sides of the building, and inside this rectangle will be fourteen "islands," 20 by 30 feet in size, containing room for four stalls each, with plenty of aisle space around the islands and between them and the side stalls. In the center of these islands, refrigerators, each 9 by 18 feet and about 10 feet high, are to be placed, having four compartments, thus giving space to each stall operator.

All furnishings will be as free from wood as it is possible to make them—at least, little will be visible. The refrigerator boxes will be finished on the outside with white cement. The interior will be free from all pipes and wires. These will all be placed underground in two specially constructed reinforced concrete tunnels nearly 7 feet deep and 5 feet wide, traversing the entire length of the building.

The service floors will all be of tile on concrete, and so arranged as to drain to outlets, making it possible to clean the building by hose. The stall fronts are of glazed brick, and glass cases will screen and cover the products in each. Up to a height of 6

feet the walls of the interior will be of glazed brick, and the remainder will be of face brick. The ceiling will be plastered. The main street fronts will be of limestone, and the service front—that is, where the products sold are brought in—will be of pressed brick. There will be three fronts for the use of customers and one exclusively for service.

Among the outstanding features will be an incinerator in which all refuse will be burned as it accumulates. The building will be lighted by indirect methods. Flood lights for this purpose will be placed upon the refrigerators located in the islands, so that no electric lights or fixtures will be visible. Comfort stations are provided for both races and for both sexes, as well as similar facilities for the stall employees. Locker rooms will be furnished the merchants.

No live fowl will be allowed within the market proper. Crates will be received in the service department. The fowl will be taken from the crates and hung on a rack by special hooks, stabbed, allowed to bleed until dry, then steamed, carried across the room to the "dressing" tables and, when ready for the customers, passed to the various stalls. The refuse will be distributed to the incinerator from the cleaning rooms.

A complete restaurant for market employees and the general public, 36 by 45 feet, will take a part of the second floor.

There is room in one end for the office of the manager. The fish market will be a unit in itself. There will be two elevators.

The building is equipped with a cold storage plant of sufficient capacity to take care adequately of all refrigerators and refrigerated counters in the stalls; together with two floors, each 50 by 90 feet, which will be divided into bins for the storage of surplus stock by the various merchants.

The cost of the structure, with its mechanical equipment and furnishings, will approximate \$500,000. The complete plant was designed and is being built under the supervision of a local architect, Benjamin F. Mitchell, A. I. A. It is being erected by the Baker & Brinkley Company, local contractors.

CHARLES E. ASHBURNER,
City Manager.

Roanoke's New Market and Auditorium

ROANOKE, VA.—Important service to the people and substantial revenues to the municipality are resulting from the operation of Roanoke's new city market.

The old market building stood on land which had been donated to the city in 1880 for the Market Square by the Roanoke Land & Improvement Company. A few years ago the city acquired, for \$50,000, a lot adjoining this square, with the idea of building a



INTERIOR VIEW OF THE ROANOKE MARKET

**THE OLD MARKET IN ROANOKE**

new market. Upon the land acquired and a portion of the old Market Square the new city market was erected, extending from Campbell to Salem Avenues. The building measures 90 by 175 feet and has a shed over the sidewalk around the entire market. It has been in operation since March 1, 1922.

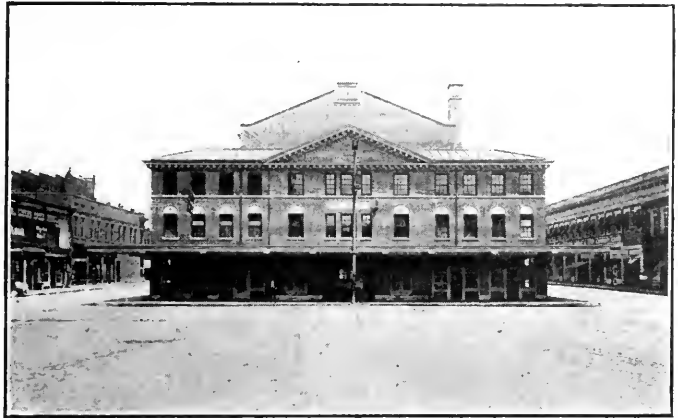
The market has entrances on each of the four sides of the building. Electric fans are installed at each entrance to keep out flies. A wide aisle extends through the entire building from north to south, giving ample room for shoppers to inspect the meat in the display cases. On each side of this aisle are ten butcher stalls, equipped with refrigerating boxes and with display cases set on white enamel bases.

Around the outside of the market are twenty stores for green groceries, produce, fish and oysters. These store fronts recess back from the sidewalk about three feet in

order to make room for displaying food for sale. Farmers bringing produce to the market back their wagons and trucks to the curb line along either side of the market.

On the second or mezzanine floor is the office of the clerk of the market, and rest rooms for both white and colored. There is a white lady, with a colored assistant, in charge of these rooms. On the third floor is the auditorium, with a seating capacity of 1,200. At the rear of the stage are dressing-rooms and a kitchenette, and in front of the auditorium there are three office rooms.

The cost of the market building complete

**ROANOKE'S NEW MARKET AND AUDITORIUM**

was \$150,060, plus the \$50,000 for the additional land acquired, making the total investment to the city \$200,060. The city is receiving an annual revenue of \$47,750 from the rent of the butcher stalls, the storerooms and the auditorium, together with the curbage fees. The estimated operating expense for the year 1923, including the interest on bonds, is \$25,900, which makes the estimated net revenue \$21,850.

W. P. HUNTER,
City Manager.

You Can Get Abstracts of Health Articles

Valuable information on various phases of public health is given in the Public Health Engineering Abstracts which are issued in mimeographed form by the Bureau of Public Health Service of the U. S. Treasury Department. The issue of February 10, 1923, covers articles in periodicals on munic-

ipal swimming pools, water purification, sewerage, sewage and industrial wastes and pure milk and other foods. The abstracts are specially prepared and signed, and make clear the particular service which each of the original articles can render to those interested in the health of cities and towns.

Water-Supply Contamination by Mine Drainage

By J. W. Ledoux

Consulting Engineer, Philadelphia, Pa.

THE problem of providing public water-supplies in that portion of Pennsylvania which is underlaid with coal is becoming more difficult as mining development increases. Bituminous coal seams all contain sulphur and iron, and the rock formations immediately in contact with the coal contain iron pyrites, or sulphide of iron. When these coal beds are left untouched, the streams draining the coal lands are usually not contaminated to any marked extent by sulphur water; as soon as they are broken by mining, the water flowing from the mines dissolves the sulphur and iron, becomes highly charged with sulphuric acid and if undiluted will attack metals, and is unfit for any domestic or industrial purpose.

Where the mine opening is below the ground water-level, the water must be pumped out by means of wood-lined pumps through wood or cement-lined pipes, and this process constitutes one of the difficulties of mining. When the water reaches the small streams, it colors them black or yellow, kills fish and vegetation, and if in material quantity makes the stream unfit for use as a water-supply.

Many of the towns in western Pennsylvania have been obliged to abandon their supplies thus contaminated. Some have tried to purify the water chemically and others have put up with the evil where the contamination was not too great. The city of Johnstown was obliged to abandon the use of Stony Creek. Latrobe had to give up the Loyal Hanna Creek. McKeesport treated the Youghiogheny River for some years, and finally abandoned it and went to the Monongahela, which was not so badly contaminated.

The city of Altoona has continued to use Burgoon's Run, which has mining op-

erations on its head waters, but with the large dilution produced by the city's impounding reservoirs, the water is fairly satisfactory most of the time, although said to be slightly acid for a considerable portion of each year. Pittsburgh and many other towns use the Allegheny and Monongahela Rivers, which, while acid at times, have not as yet reached the condition which makes their use prohibitory without chemical treatment.

There are many cases where municipalities or water companies have appropriated uncontaminated water-supplies and continued to use them for a number of years, and later coal mining has been developed to such an extent on the watershed that either the supply had to be abandoned or its purity was so seriously menaced that abandonment in time was a foregone conclusion. Where the water-works people had taken the proper steps according to law to protect the water-supply from contamination and the coal mine drainage had afterwards begun to menace the supply, it would have been a serious question whether they could prevent or enjoin this mining industry. There is a lot to be said on both sides of this question. As a broad general principle, if a municipality's or a water company's legal rights to prevent contamination are assured by the state, then the mining industry will be inoperative.

In looking over the many legal cases in Pennsylvania and other states bearing on this problem, one gets the impression that there is no consensus of opinion as to whether the water company or the municipality should be able to protect its water-supply against drainage from coal mines that are opened after the water-supply has been legally appropriated by the city for its use.

Iola, Kansas, Resurfaces Concrete Pavements

By C. W. Boulson

City Engineer, Iola, Kans.

IN 1912, the city of Iola, Kans., laid a cement concrete pavement on East Jackson Avenue, extending from Cottonwood to First Street. Although the avenue was in the residential section of the city, a 6-inch pavement was laid, using a 1:2:4 mix. Chats were used as a mineral aggregate, and conditions seemed satisfactory. After having been subjected to traffic for six months, the pavement began to show signs of disintegration. Transverse and longitudinal cracks appeared in the sur-

face. It became necessary to improve the street, but to take up the concrete pavement and build an entirely new structure would have been prohibitive at that time. We decided that the most economical procedure was to overhaul the old concrete pavement and to use it as a foundation for an asphaltic concrete pavement.

It was first necessary to remove all loose material from the old pavement and to cut out all weak spots, so that the foundation would be hard and compact and the bond



EAST JACKSON AVENUE, IOLA, KANS., SHOWING THE TEXACO ASPHALTIC WEARING SURFACE LAID ON OLD CEMENT CONCRETE PAVEMENT IN OCTOBER, 1921

face, and where these cracks crossed, traffic gradually wore holes in the pavement, which soon became objectionable.

The writer was not connected with the city at the time this pavement was constructed, but close observation of the street showed that cracking and potting were due not to faulty material or workmanship, but to expansion and contraction resulting from heat and cold, as the pavement had not been constructed with expansion joints.

between the asphaltic surface and the base would not be destroyed by the presence of loose concrete. Holes in the old pavement which penetrated its entire depth, or almost so, were filled with new concrete. Pot-holes and large holes which did not extend to the subgrade were filled with asphaltic binder. Finally, a Texaco asphaltic concrete surface having a thickness of 2 inches was laid, and the street was opened for traffic at once.

These
Cartoons
Are Helping
to Educate
the Public
to an
Appreciation
of the
Importance of
City Planning
and Zoning
Ordinances



THE AWKWARD SQUAD

Reproduced from "Progress," the official organ of the Citizens Committee on City Plan, Pittsburgh, Pa.



WHEN A CITY SEES TO-MORROW IT PLANS FOR ITS FUTURE GROWTH TO-DAY
A copyrighted cartoon obtainable from the Better Times Syndicate, New York

ZONING WILL PROTECT RESIDENTIAL NEIGHBORHOODS FROM THE BUILDING BUZZARDS
A cartoon used by the Philadelphia Housing Association

Modern Street Lighting Marks Progressive Communities

By L. A. S. Wood

CRIMES are generally committed under cover of darkness. A survey conducted by Ward Harrison in Cleveland shows that crime actually decreased in the areas of intensive illumination, as compared with the darker sections of the city. A similar survey covering accidents shows a marked increase in traffic accidents during the hours of darkness. The effectiveness of street lighting as a deterrent to crime was conclusively demonstrated in Chicago during the war, when an attempt was made to reduce coal consumption by extinguishing the street lamps. Even in the face of a severe fuel shortage, it was decided that street lighting was a necessity which could be partially compensated for only by an enormously increased police force.

The Relation of Street Lighting to Progress

The manner in which the streets of a city are illuminated is a very good indication of the progressiveness of its inhabitants. An analysis of the cities of the United States shows that there is room for improvement both in intensity of illumination and in design of street lighting equipment.

Even though the advantages of good street lighting are generally appreciated, it is astonishing to note that the average city to-day is spending per capita on street lighting little, if any, more than it spent twenty or thirty years ago. It is true that in most cases there is a great improvement in illumination and in types of equipment, but this is because of the efforts of illuminating engineers in designing more efficient outfits and not because of increased expenditures on the part of municipalities.

Street Lighting Budgets

Street lighting budgets form only a small portion of total municipal expenditures; and while there have been large increases in practically all departmental expenditures, which, in some cases, have nearly doubled in the past ten years, there have been only slight increases in the street lighting budgets. The per capita cost of street lighting has remained practically constant.

An investigation of municipal finances was recently made to determine just "where the tax dollar goes" and whether a fair proportion is expended on street lighting.

This disclosed the rather startling fact that, while 21 cents of each dollar "goes" for protection (police, fire, inspection, etc.), only 3.4 cents "goes" for street lighting. Since adequate street lighting decreases crime and assists the fire and police departments, it would seem logical that a slight

increase in the street lighting budget might be offset by a reduction in the budget for "protection." The average cost of street lighting for the whole of the United States is approximately 71 cents per capita, and although it is generally conceded that for good street lighting the average per capita expenditure by the municipality should not be less than one dollar, there are only four states which exceed a dollar, and only nine which exceed ninety cents.

Illumination Intensities

Prior to the advent of the automobile, a comparatively low intensity of illumination that would serve merely to indicate the outline of the roadways was considered adequate, but with modern rapidly moving traffic higher intensities are required. Ex-

HEADLINES FROM CHICAGO PAPERS

Electricity The Silent Policeman
Chicago Dark—Bandits Busy
Thirty-Two Holdups and Many Other
Crimes in Two-Day Period
Mayor's Motor Stolen
Street Lighting Turned Off To Save
Coal—Turned On To Save People

periments have demonstrated that there is a direct relation between the ability of an observer to see a rapidly moving object and the intensity of its illumination; in fact, a rapidly moving object which may be invisible under a low intensity can be readily distinguished under an increased illumination. On the other hand, an easily distinguished object adjacent to an unshielded light source of low intensity may become invisible if the light source is increased to the point of glare. Thus, too much light, undiffused, is as objectionable as too little light.

This leads us to the following conclusions:

1. A high intensity of illumination is desirable with modern rapidly moving traffic.
2. The light source should be so arranged as to reduce glare to a minimum.

Series Incandescent Lamps

With a series street lighting system, using incandescent lamps, and with proper spacing and mounting heights for the light units, practically any desired degree of intensity can be obtained. Series Mazda lamps which give a lumen output of 25,000 (2,500 candle-power) have recently been developed, and many systems are now operating with 10,000- and 15,000-lumen lamps. The efficiency of the series Mazda lamp increases with its size, and since the equipment, such as cable, posts, and light units, and the labor of trimming are the

same for all sizes of lamps, it is obvious that the larger lamps are more economical to operate.

Municipalities are likely to overlook this condition and often seek to reduce the costs of a street lighting system by using lamps of inadequate size. This is poor economy and should be discouraged.

Arc Lamps

In the eastern seaboard states there are still a number of the more efficient arc lamps in service. Although the slightly lower maintenance costs of a series Mazda system may not justify the scrapping of existing systems of this type, the advantages of the Mazda equipment are so many that there have not been very many installations of arc lamps made in recent years.

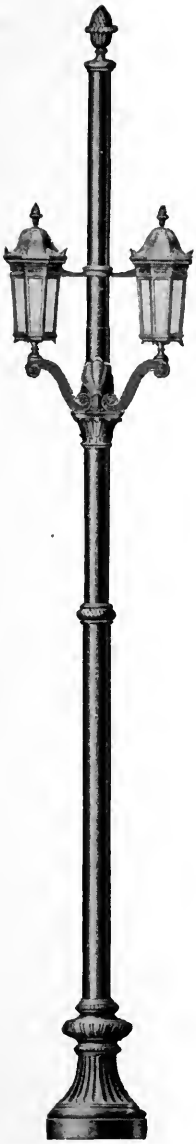
The most important advantages of the series Mazda street lighting system are its simplicity and the fact that lamps ranging in size from 400 lumens (40 candle-power) to 25,000 (2,500 candle-power) may be operated from the same circuit. Thus the intensity of illumination throughout the city can be readily graduated to suit the requirements of any locality.

Mounting Height

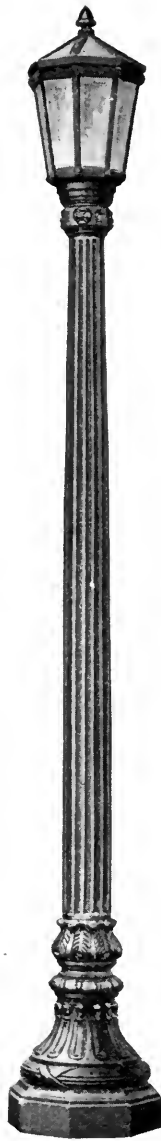
High mounting, 13 to 20 feet, is generally adopted on down-town business streets and important boulevards where exceptional high intensities are required.



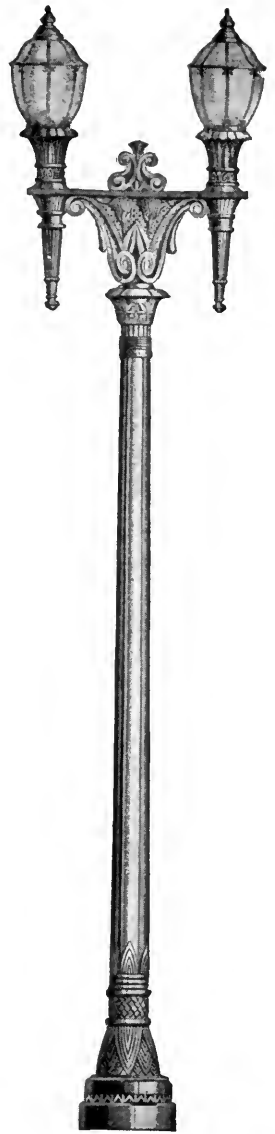
NIGHT VIEW, LIMA, OHIO



Grant Park, Chicago,
Trolley Bracket



Commercial Post
with Octagonal Re-
flecto-Lux Top



Egyptian Duplex
Post

Under these conditions it is desirable to select a unit which will control the direction of the light either by the use of refracting glassware or by specially designed reflectors.

Lower mounting heights are usually adopted for residence streets in order to place the light source below the foliage of trees lining the sidewalks. In this case, lamps of lower power enclosed within diffusing glassware are used.

"White Ways"

Until the public became aroused to the necessity for well-designed and uniform systems of ornamental street lighting, progressive merchants installed, at their own expense, systems of ornamental posts or "white ways," which often resulted in the installation of equipment of various designs in different parts of the same city. This activity on the part of merchants should be carefully directed by municipal

authorities, and the uncontrolled installation of "white ways" should be discouraged. An ornamental street lighting system should be considered as part of a plan to beautify the city as a whole, and not as a means of advertising one section, perhaps to the detriment of some other locality.

Ornamental Street Lighting

The trend of street lighting practise is toward a system of lighting which will add charm to the streets of a city by day as well as illuminate effectively the streets by night. The unsightly overhead equipment is being rapidly replaced by underground cable construction and ornamental posts supporting specially designed lighting units.

Manufacturers of street lighting equipment have developed in the last few years many interesting designs possessing unusual artistic merit, which will be found suitable for the varying conditions which exist in different parts of a city. For important boulevards or exceptionally wide business streets, two-light posts may be used, and ornamental posts of this character add considerably to the attractive appearance of a boulevard. For down-town business streets a variety of single-light ornamental posts is offered, from which a selection may be made which will harmonize with the surrounding architecture.

On streets where steel poles supporting trolley span wires are advantageously placed, the steel poles may be used as supports for ornamental lighting brackets, thus eliminating the necessity for cluttering up the street with additional posts.

Cast Iron, Concrete and Pressed Steel Posts

In selecting ornamental street lighting equipment, a unit should be chosen which, while effectively illuminating the streets at night, will be inconspicuous in the daytime, blending harmoniously with the architecture of the surrounding buildings. Since the purpose of the ornamental post is to support the light unit, a slender design is preferable to one of massive appearance. The durability and lasting qualities of the post should also be considered, and experi-

ence has shown that cast iron, concrete, and pressed steel posts each possess particular merits.

Lighting Units or Post Tops

Lighting units or post tops may be divided into two classes:

1. Those designed to diffuse the light and in which the light source is invisible (used for low mounting)
2. Those designed to direct the light into the plane of illumination with maximum efficiency (used for high mounting)

There are several types of diffusing glassware in commercial use. Care should be taken in the selection of a type of glassware which will thoroughly diffuse the light without undue absorption. A satisfactory glassware with an absorption of from 9 to 15 per cent, through which the filament of the lamp is invisible, may be obtained.

The use of refractors alone to direct the light into a definite plane has been limited to large-candle-power, single-light sources, mounted high on ornamental standards; and, when refractors are placed at lower heights, it is necessary for optical comfort to use an outer globe to soften the brilliancy of the light source. In addition to refractors, the light may be redirected by reflectors.

Extension of Improved Street Lighting

It should be the part of municipal officials to furnish intelligent and aggressive leadership in the movement toward better street lighting. Until recently, this movement has been largely a vague groping toward meeting a need which has been experienced rather than carefully analyzed and fully understood. As the American public more clearly recognizes that, impelled by changed social conditions, it is in process of adopting radically higher standards of street lighting service, the movement will be greatly quickened to the advantage of our citizens.

ACKNOWLEDGMENT.—From a paper presented at the Twenty-seventh Annual Convention of the International Association of Municipal Electricians.

"Furnish more play space and you will save more jail space."

—WILLIAM L. ETTINGER, *Superintendent of Education, New York City.*

Street Planning and Paving in St. Petersburg, Florida

By John B. Bennett

IN the planning of St. Petersburg, Fla., practical far-sightedness was widely shown, particularly in the planning of the streets. The avenues extend directly east and west, and the streets north and south. The avenues are divided into a North and South classification by Central Avenue, the principal business thoroughfare, which extends seven miles in a straight line from Tampa Bay on the east to the Gulf of Mexico on the west. The avenues extending parallel to and north of Central are known as 1st Avenue North, 2nd Avenue North, etc.; those on the south side of Central and parallel to it are called 1st Avenue South, 2nd Avenue South, etc. The streets are all classified by numbers, beginning with 1st Street on the east side of the city. They are also divided by Central Avenue, those extending north from Central Avenue being known as 1st Street North, 2nd Street North, and those extending south from Central as 1st Street South, 2nd Street South, etc.

The street numbers begin with Central

Avenue, the avenue numbers with 1st Street, making it an easy matter to locate any street address; for instance, 925 4th Avenue North would be between 9th and 10th Streets North. At the intersection of an avenue and a street a post is planted at one of the corners within the curb. The posts are about 6 inches square and 2 to 3 feet high. They are painted white and lettered in black, giving the street number on two sides and the avenue number on the other two sides. As no long street names are used, the large numbers show very plain to anyone riding or walking. The method appears to be most efficient and satisfactory.

It was a wise provision in the original laying out of St. Petersburg to make all the streets in the central section—which is one mile square—100 feet wide. In the business section 60 feet of the street width is brick-paved roadway, and 20 feet on each side is for sidewalks. The residence streets in the central section usually have 20 feet of brick-paved roadway, 20 feet of parking



VIEW ON RESIDENCE STREET IN CENTRAL PORTION OF ST. PETERSBURG, FLA.

Note the street sign post on right side of picture by the fire hydrant

on each side of the paving, 6 feet for sidewalk, and 4 feet between sidewalk and property line.

St. Petersburg being one of our fastest-growing cities, it is evident that traffic congestion would soon occur on portions of adjacent narrow-paved streets. This trouble is prevented by widening the paved portion from 20 to 40, 50, or to the limit of 60 feet, if necessary, by taking away from the parking area on each side of the paving. Work of this character is going on continuously. The minimum width for paving has been increased from 20 to 24 feet.

The surface in St. Petersburg is all sand. In making a pavement, the sand is wet thoroughly, rolled hard and shaped from curb to curb, the curb usually being of granite. The brick block are then laid on this rolled surface of sand, flat side down, rolled again, and sprinkled over with plain sand, except in places where there is danger of "washing," in which case an asphalt filler is used. The cost is about \$2.10 a square yard, exclusive of grading, which costs about 48 cents a cubic yard. For the

granite curb set, the cost is 50 cents per lineal foot. The cost of a 20-foot paved roadway, including curb, grading, and everything complete, will average about \$3.10 per square yard, exclusive of asphalt filler, or about \$3.25 per lineal front foot, including crossings, which would amount to \$162.50 on a 50-foot lot. The cost of asphalt filler is 25 cents per square yard additional. As the extremes of temperature are only about half as far apart as they are in the North, expansion joints are not required.

The city now has about 79 miles of brick paving, and this is being added to as rapidly as possible. All paving expense is charged to abutting property. Most of the brick come from Georgia. Streets outside the central zone are 60 feet between property lines; the paving is 20 feet and the parking is narrowed accordingly. All the streets are unusually clean and as a rule, in splendid condition. Most of the sidewalks are made of hexagon-shaped cement tiles, about 15 and 18 inches in diameter, in white and black, giving an attractive mosaic effect.

Road Signs and Local History

By Margery Quigley

THE village of Durham, N. H., is surrounded by a network of cross-roads and forks which seem designed to turn the autoist from his destination. The selectmen determined to remedy this situation with distinct and adequate signs. Because

the village had a population of only 400 and consequently only a tiny budget, they planned at once that their signs should be inexpensive, though substantial. And because theirs was also a village with traditions, they determined that the signs should be fitting and with local interest.

With only the aid of the neighborhood sign painter they evolved clear and charming signs. On a white ground the orange-brown of the state highway bands was combined with silhouettes. The history of the section is bound up alike with the stage coach and the post riders of old days and the farmer's two-wheel dump-cart, so all these are represented in silhouette on the signs. Near the town pound a runaway hen is fittingly pictured as starting up the Dover road to see the world. A vagabond with his pack and stick goes blithely along in silhouette toward Rockingham.

New Hampshire has no option on the use of silhouettes, nor is it alone in items of historical interest which can be suggested by simple pictures.



ROAD SIGN NEAR DURHAM, N. H.

Experiences in Street Cleaning in Joplin, Missouri

By Otto R. Mit

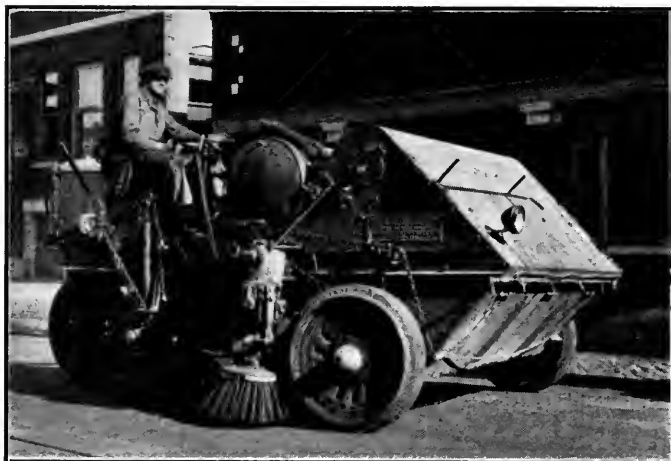
Assistant City Engineer, Joplin, Mo.

THE city of Joplin has some 125 miles of hard-surfaced streets, including brick, wood-block, asphalt, concrete, and macadam. The macadam streets are maintained by a motor tractor and grader and are dragged about twice each month. This work is under the head of street maintenance and is not charged to street cleaning. The remaining hard-surfaced streets are cleaned by the Department of Street Cleaning.

Prior to June, 1918, the pavements were cleaned by hand brooming, using from eighteen to twenty men and three or four teams. The scale of wages at that time was \$2.50 per day for men and \$4.50 per day for teams. The total average cost per month for street cleaning at this scale amounted to \$1,353.

Two horse-drawn flushers were also used at this time. Flushing was discontinued after the installation of the motor sweeper, the practise after this installation being to wash the gutters with a fire hose, at night. This was done only on the main streets where parked vehicles made it impossible to sweep the gutters.

Some time during the month of June, 1918, an Elgin motor pick-up sweeper was purchased by the city. This early-model sweeper had no gutter-broom attachment, consequently two men were employed to sweep and flush the gutters. Two men were also employed to clean alleys and other inaccessible places, and the teams were cut down to one pick-up wagon. The wage scale at this time was raised to \$3.55 per day for laborers and \$6.00 per day for teams, the sweeper driver being paid \$4.75



TYPE OF PICK-UP SWEEPER USED IN JOPLIN, MO.

per 8-hour day. With this reduction in forces and the raise in wages, the total average cost per month amounted to \$1,119.-42, a less amount than the hand-brooming cost at the old wage scale.

At the end of four years, in June, 1922, the original motor sweeper, purchased in 1918, was judged as worn out, the maintenance and repairs having become excessive, and a new model Elgin sweeper was purchased. This new model has a gutter-broom attachment which eliminates the necessity of cleaning the gutters by hand. The attachment made it possible to further reduce the street cleaning force by dropping the two gutter men. The present force consists of one sweeper driver, two men to clean alleys and other inaccessible places, one general utility man, and one horse-drawn pick-up wagon. During seasons of the year when streets are excessively littered with leaves, the force is augmented by one motor truck of 3-cubic-yard capacity, and two extra men to load the truck. During normal times this truck is used by the maintenance department.

At the end of the first four years of

motor sweeping and before the purchase of the new sweeper, a careful comparison was made between the costs of hand and machine sweeping, to judge as to the economy of purchasing a new sweeper. It must be remembered that shortly after the purchase of the motor sweeper in 1918 the daily wage scale for common labor advanced from \$2.50 to \$3.55 per day, and for teams from \$4.50 to \$6.00 per day, an advance of approximately 42 per cent.

The average daily pay-roll for street cleaning by hand brooming prior to 1918 was \$45.10, or a monthly average of \$1,353. At the present wage scale, adding 42 per cent, this would amount to a monthly average of \$1,921.26, or a total of \$92,220.48 for four years.

After the purchase of the sweeper the average monthly pay-roll amounted to \$980.36, gasoline and oil averaged \$39.86, and additional maintenance on the sweeper amounted to \$50.00 per month, making a total average of \$1,070.22 per month, or a total for four years of \$51,370.56.

The original cost of the sweeper was \$6,500. Assuming the life of the sweeper as four years, 8 per cent interest on this amount for four years amounted to \$2,080, the total investment amounting to \$8,580. A tabulation of these costs shows:

| | |
|---|-------------|
| 1. Average cost per month of hand sweeping (at present wage scale)..... | \$1,921.26 |
| Average for four years.... | 92,220.48 |
| 2. Average cost per month for motor sweeping: | |
| Labor | \$980.36 |
| Gas and oil.... | 39.86 |
| Maintenance .. | 50.00 |
| Monthly total | 1,070.22 |
| Average for four years.... | 51,370.56 |
| 3. Cost of motor sweeper | 6,500.00 |
| Interest, 4 years at 8 per cent.. | 2,080.00 |
| Total investment | 8,580.00 |
| Summary: | |
| Total cost hand sweeping for four years..... | 92,220.48 |
| Total cost motor sweeping for four years..... | 51,370.56 |
| Total investment | 8,580.00 |
| Total costs motor sweeping and investment | 59,950.56 |
| Actual net saving by motor sweeper for four years..... | \$32,269.92 |

An item of economy that must not be overlooked when motor sweepers are used is the matter of superintendence. A large force of hand sweepers requires the services of several overseers, and a great deal of activity on the part of these overseers to properly direct the work and to obtain the highest degree of efficiency possible. Before the introduction of machine sweeping in Joplin, the city employed a superintendent of streets, an assistant superintendent, and several foremen to direct the sweepers. At the present time the superintendents of streets, alone, directs the work of street cleaning; the machine allows the elimination of at least four men formerly used for overseeing, and drawing higher wages than common labor.

The principal business streets of the city are cleaned at night, and immediately after the sweeper was installed a difficulty was encountered due to the many vehicles parked along the streets in the business section. To remedy this, the City Commission passed an ordinance regulating the parking of vehicles in certain places between certain hours. The following is a paragraph from the ordinance which was adopted:

"Section 1654-A.—No vehicle shall be left standing or parked between the hours of 12 o'clock midnight and 5 o'clock a. m. on the following streets: Main Street between First and Tenth Streets; Virginia Avenue between Third and Sixth Streets; Joplin Street between Third and Seventh Streets; and any of the intersecting streets included in the above limits, unless said vehicle shall be in charge of some person having control over said vehicle, and it shall be the duty of any such person having charge of any such vehicle to promptly move the same upon the direction of any employee or employees of the Department of Streets engaged in cleaning, sweeping or flushing said street."

The sweeper driver was given a special police commission and power to enforce this ordinance, and the passage and enforcement of it have to a great extent solved the problem of keeping the business streets clean.

A SYNDICATE NEWS SERVICE FOR CIVIC BODIES AND NEWSPAPERS

Material on municipal and civic progress, especially adapted to the bulletins of chambers of commerce and other civic bodies, or for publication in local newspapers, is now available at low cost through the Better Times Syndicate, 100 Gold Street, New York. Original copyrighted articles, news items, and cartoons are being mailed to subscribers early each month for release on or after the first of the following month. A specimen month's service may be secured without charge on application to the Syndicate.

Lighting for Safety Isles and Boulevard Crossings

By Frank Brueggeman

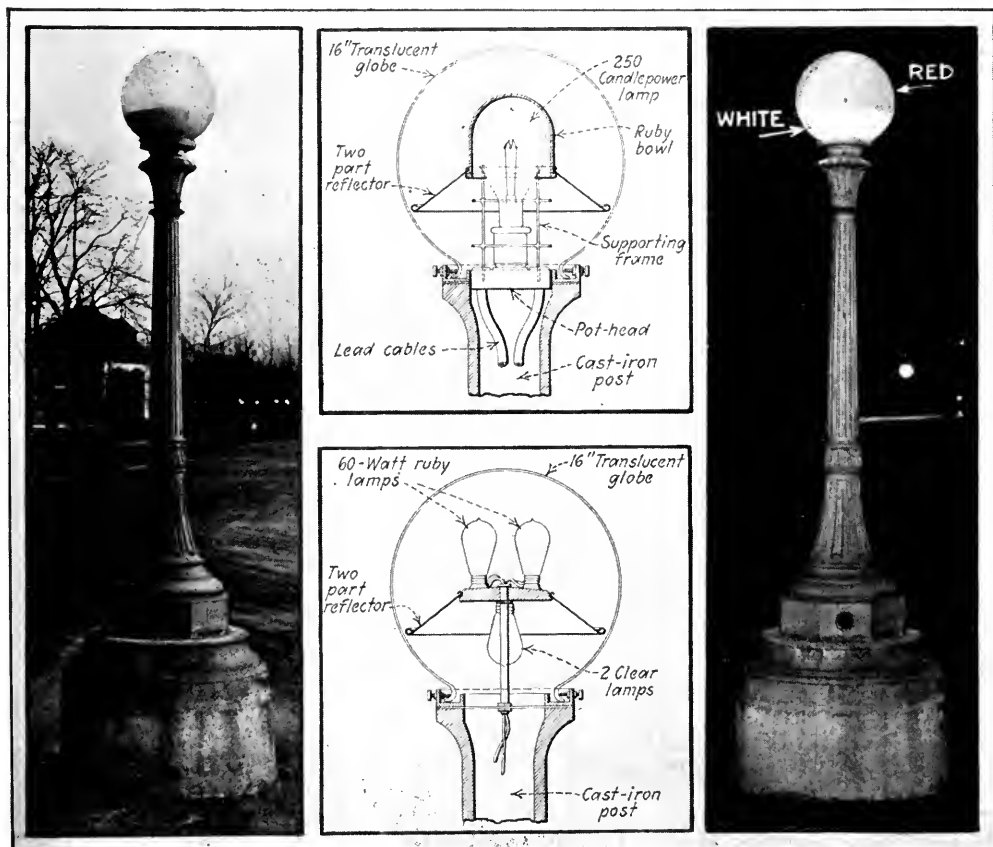
Assistant Mechanical and Electrical Engineer, South Park Commissioners, Chicago, Ill.

IN highways, usually at the intersection of driveways, it is customary to place what is termed a "safety island." As the name implies, the primary purpose of a safety island is to furnish a zone of safety for pedestrians; secondarily, it is supposed to assist in the routing of vehicles.

In order that such safety islands may function best, it is necessary that they be easily visible both in daytime and at night. Therefore, it has been the usual practise to place a post in the center of the safety island, at the top of which is a light enclosed within a red or ruby globe. While a red globe has an advantage, in that when the

light is on, it may be clearly seen, it is open to objection in that the base of the post and the safety zone are dark and cannot be seen by drivers of vehicles, which sometimes results in serious injury to life and property.

This objectionable feature has been entirely overcome by the simple and inexpensive fixture herein described. A number of these fixtures have been thoroughly tried out for some time at busy intersections on Chicago's boulevards, and have been found very satisfactory. A translucent globe is used in place of the usual expensive ruby globe. The fixture consists of a conical metallic reflector constructed in two parts,



A DAY AND A NIGHT VIEW OF A SAFETY ISLE EQUIPPED WITH A FIXTURE THAT ILLUMINATES THE ENTIRE STANDARD

which is assembled after being placed within the translucent globe, which in turn is carried on a four-light cluster supported from the globe holder below.

The light cluster is arranged with two ruby incandescent lamps above and two clear lamps below, as illustrated, and is supported from the globe holder at a predetermined position. When the globe is placed on the holder, the assembled shade adjusts itself on the cluster and divides the globe into two compartments. The upper portion of the globe shows red, while the lower portion illuminates the safety zone surrounding the fixture.

The accompanying photograph shows a day and a night view of a safety island equipped with the fixtures. A number of the fixtures are proving very satisfactory as boulevard crossing signals. In such cases the fixture is used on the regular series boulevard lighting standards, the lamp cluster being eliminated by use of a ruby glass inverted bowl enclosing the upper part

of the regulation series tungsten lamp, the reflector being supported from this ruby glass bowl. The illuminating effect of the street light is not affected by the installation of the fixture, as only the upward rays are utilized for creating the signal.

In the city of Chicago there are three large park systems, and they, as well as the city of Chicago, have ordinances that require all vehicles to come to a dead stop before driving onto, or crossing, a boulevard. Some definite signal is necessary to inform the driver of his approach to a boulevard, particularly at night. Several schemes were tried out, one being illuminated signs, which are quite expensive to install as well as to maintain. The most satisfactory method is to place the described fixtures on the regular illuminating posts at the boulevard and city street intersections and the boulevard crossings. This can be done for a small portion of the cost of installing illuminated signs, and the maintenance cost is practically negligible.

St. Louis Votes \$87,372,500 Bonds

ST. LOUIS will soon enter into an era of physical transformation and development as a result of the sweeping approval at the polls, on February 9, of twenty items of the municipal bond issue, aggregating \$87,372,500 of the \$88,372,500 program. Only one item, that for the \$1,000,000 Armory, fell short of the required two-thirds majority. The total vote cast was 90,899, and the majorities mounted as high as 65,259. On three proposals—the water-works, the hospitals, and the Fire Department equipment—the majorities as reported by the *St. Louis Post Dispatch* exceeded by 50,000 or more the actual two-thirds requirement. The thorough endorsement of the program was attributed to the intensive educational campaign carried on for nine weeks in advance of the special election, and the many months of preparation since the beginning of the bond movement. From start to close the bond movement has been one by the citizens. It was prepared by citizens in public hearings and drafted into an ordinance by the Board of Aldermen after a month of public hearings, and the expenditures

will be subject to the control of a Citizens' Supervisory Committee of seventeen members, representative of all interests. The items authorized are as follows:

| | |
|---|-------------|
| Opening and widening streets..... | \$8,650,000 |
| Union Station Plaza | 2,600,000 |
| Paving, repaving, improving streets..... | 5,800,000 |
| City-wide electric lighting..... | 8,000,000 |
| New Court House | 4,000,000 |
| Construction and reconstruction of sewers.. | 8,000,000 |
| River des Peres sewer and storm channel.. | 11,000,000 |
| New parks and playgrounds..... | 2,500,000 |
| Improvement of existing parks and playgrounds | 1,300,000 |
| Aquarium in Forest Park..... | 400,000 |
| Municipal lighting, heating and mechanical building | 1,000,000 |
| Hospitals and institutions..... | 4,500,000 |
| Municipal auditorium and community center | 5,000,000 |
| Memorial Plaza and building..... | 6,000,000 |
| Fire Department motor equipment, reconstruction of engine houses..... | 772,500 |
| Elimination of grade crossings..... | 1,600,000 |
| Northeastern approach to Free Bridge (Illinois side) | 1,500,000 |
| West approach, Free Bridge (St. Louis side) | 1,500,000 |
| Construction and reconstruction of public markets | 1,250,000 |
| New water-works on Missouri River (to be paid for out of Water Division revenue). | 12,000,000 |

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Dangers to the Sanitary Quality of Public Water-Supplies--Part II

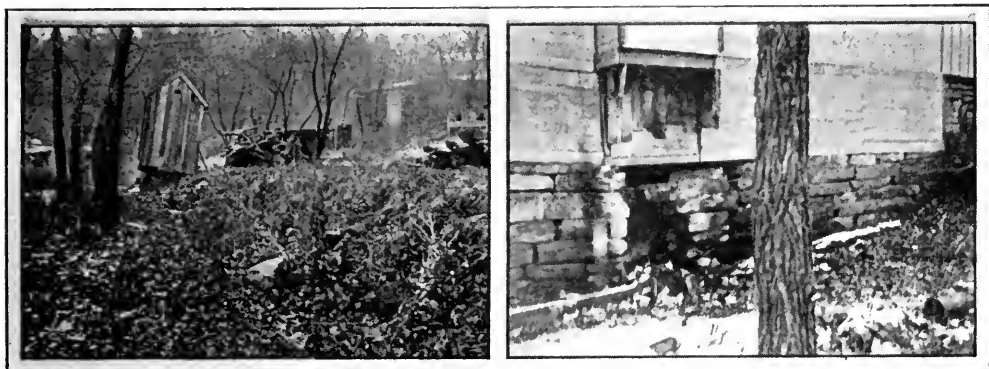
By E. Sherman Chase

Sanitary Engineer, Metcalf & Eddy, Boston, Mass.

THERE is a popular opinion that water-supplies taken from the ground are of better quality than those from surface sources, particularly supplies from what is termed "solid rock." There is some justification for the belief that ground waters are safer from a sanitary view-point than unpurified surface supplies because of the natural processes of purification to which ground waters have been subjected. On the other hand, it is impossible to determine just what is taking place in the ground, and it is

strict, on account of the numerous opportunities for general pollution of the subsoil by leaky sewers, cesspools, privies, etc. It is not often that a public supply will be thus located, although many private and semi-public wells will be located in the center of thickly settled communities.

The city of Watervliet, N. Y., long suffering with one of the worst public water-supplies in New York State, had therefore provided several public wells at convenient points about the city. Most of these wells



Courtesy of Earl Devendorf

PRIVIES ON KESHEQUA CREEK, A SOURCE OF WATER-SUPPLY, AT ONE TIME UNPURIFIED, FOR A NEW YORK STATE INSTITUTION

also impossible to control the natural processes of purification as in the case of artificial methods.

The safety of ground water-supplies depends upon the remoteness of potential sources of contamination, the manner of development of the supplies, the character of material penetrated, direction of ground water flow with respect to the location of sources of pollution, adequacy of casing or curb to exclude surface water, and freedom from chance pollution by polluted flood water.

General Pollution of Ground Waters.—As a general thing, it is inadvisable to sink or dig wells in a thickly populated dis-

trict, on account of the numerous opportunities for general pollution of the subsoil by leaky sewers, cesspools, privies, etc. It is not often that a public supply will be thus located, although many private and semi-public wells will be located in the center of thickly settled communities.

trict, and in many cases were not far distant from the street sewer. The wells were either driven or excavated to a comparatively shallow depth through fissured shale. Analytical examinations of the waters from these wells showed that practically every one was grossly contaminated. In one case a well was responsible for a localized outbreak of typhoid. Yet when the local board of health closed the majority of the wells, there arose considerable popular outcry.

Channels in Strata.—The character of the strata penetrated has an important bearing upon the quality of water obtained. In fine sand or homogeneous gravel the natural

purification effected is reasonably sure of being complete. On the other hand, where wells are in limestone or fissured rock, direct drainage channels are likely to occur through which practically unpurified surface water may enter the well. The historic case of Lausanne, Switzerland, where a typhoid epidemic resulted from the infected waters of a brook flowing some distance through rock fissures to the public spring, is an example of the passage of infection through underground rock channels.

Leakage Along Casings.—In the case of wells there is the possibility of leakage of polluted surface water down the outside of the casings of tubular wells, or of leakage through holes or cracks in the curbs of dug wells.

Proximity of Leaky Sewers.—The location of sewers in the vicinity of sources of ground water-supplies also constitutes a potentially serious menace to the safety of the supplies, due to the danger of leakage from joints or to overflow whereby sewage may escape into the tributary ground water.

Connection with Polluted Surface Water.—Occasionally there exists physical connection between a pure ground water-supply and a polluted surface supply, which under certain conditions results in the contamination of the ground water-supply. An example of such a connection which existed for many years without causing any trouble and was lost track of as city administrations changed, occurred in Schenectady, N. Y. The water-supply is obtained from three large dug wells, located on a flat piece of land near the south bank of the Mohawk River. These wells are about 400 feet from the river and about 40 feet deep. Ordinarily the water level in the wells stands below that in the river, but it is not probable that the supply is infiltrated river water. The sanitary quality of the water is excellent, and it had been considered one of the safest in the state of New York.

In March, 1920, there occurred high water in the river and about the same time a slight turbidity was noticed in the city water, a supply which had been invariably clear and colorless. Shortly after the appearance of turbid water in the mains, an outbreak of gastro-enteritis broke out, followed by some 53 cases of typhoid, of which 3 were fatal. Investigation disclosed the fact that there were two 24-inch suction

pipes which had originally extended through well No. 1, thence through two parallel pipe galleries to a manhole about 30 feet north of the well, whence they had continued underground to the river. The pipes had been removed from the galleries, and the holes through the walls of the wells had been sealed with concrete. The bottoms of the galleries were not paved and consisted of porous gravel. The walls of the wells were of masonry with open joints. The pipes from the manhole to the river had not been removed. Upon inspection of this manhole, it was found that only one of the pipes was sealed and that the other had presumably clear passage to the river. Furthermore, it was clear that the galleries had been flooded with river water and that this river water had entered the well through holes in the porous gravel constituting the bottom of the galleries, and through the joints in the masonry wall of the well. As soon as the conditions were discovered, the pipes to the river were sealed with cast-iron flanges with tight gaskets, two sections of the pipe between the manhole and the river were removed, the four ends thus exposed were sealed with cast iron flanges and tight gaskets, and the trench was backfilled with impervious material.

Distribution System Hazards.—Not only is it essential to deliver a pure and wholesome water to the distribution system, but it is as important to make sure that no opportunity exists for contamination to reach the supply in the distribution system itself. From the time a supply of safe character enters the distribution system it should not be exposed to accidental or deliberate contamination in accessible reservoirs nor to the introduction of impure water through cross-connection between the water-works mains and industrial systems with supplies from polluted sources.

Cross-Connections.—Numerous instances are on record where typhoid outbreaks have resulted from polluted water entering the public distribution system through cross-connections with industrial or fire protection supplies. The Lowell outbreak of 1903 is well known.

Emergency Supplies.—The use of emergency or auxiliary supplies from polluted sources is a practise fraught with unpleasant possibilities. Emergency chlorination, if properly applied from the beginning of the use of such a supply, minimizes some-

what the danger, but it is essential that chlorination be started as soon as the emergency supply is used and that continuous application of adequate amounts of chlorine be maintained.

Dual Water Systems.—Dual water-supply systems, one of safe and wholesome quality for drinking and general household use, and the other impure and for fire protection and industrial use, have been suggested. In the case of individual mills such dual supplies are actually in use in many instances. This is a practise not without danger due to the impossibility of completely preventing the use of impure water for drinking when readily accessible.

Accessibility of Distribution Reservoir.—One more hazard connected with distribution systems, while probably not one to grow extremely alarmed about, constitutes a real menace to some of our supplies. I refer to the ready accessibility of distribution reservoirs with pleasant walks and drives around them in very close proximity to the water's edge and with nothing to prevent contamination of the waters except a few absentee policemen and an occasional sign. In these days of tourists from every part of the country, one never knows when some typhoid carrier will unknowingly contaminate and infect some of our reservoirs located so conveniently alongside main traveled highways. It is a remote contingency, perhaps, but the unexpected always happens. It may be that such an infection of an open distribution reservoir occurs not oftener than once in a hundred

years, but when that one time will be, no one can predict; it may be next year or 2022, but the danger is there, and there is no assurance that infection will not occur to-morrow.

Miscellaneous Dangers.—In addition to the hazards previously illustrated in more or less detail, there are those which may arise from casual visitors, such as picnickers and hunters, to watersheds, streams and reservoirs, or from summer cottages upon the shores of lakes or ponds used as water-supply. Mains occasionally break, which necessitates the by-passing of filters. Filters and chlorination plants are frequently housed in combustible buildings. Infections of mains under repair, by sewage leaching into water pipe trenches, or of stand-pipes and distribution reservoirs by men cleaning them or making repairs are not impossible contingencies. In the case of supplies from large lakes, infection may be brought about by excreta discharged from boats passing in the vicinity of intakes.

The typhoid death rate in this country has been steadily declining for the past 20 years, largely because of improved methods in the protection of our water-supplies. Outbreaks of waterborne disease are becoming less and less frequent, but it must be remembered that eternal vigilance is the price of continued safety of our supplies. No hazard, however slight, can be overlooked without eventual consequences in the form of waterborne outbreaks of disease.

ACKNOWLEDGMENT.—From a paper read before the 1922 convention of the New England Water Works Association.

On the Calendar of Conventions

MARCH 14.—TRENTON, N. J.
New Jersey Sewage Works Association. Annual meeting. Secretary, Myron E. Fuller, 36 East Mt. Airy Avenue, Philadelphia, Pa.
 APRIL 17-20.—BIRMINGHAM, ALA.
Tri-State Water and Light Association of the Carolinas and Georgia. Annual convention. Secretary, W. F. Stieglitz, Columbia, S. C.
 MAY 8-10.—NEW YORK, N. Y.
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, Mills Building, Washington, D. C.
 MAY 8-10.—CHICAGO, ILL.
National Fire Protection Association. Annual meeting. Secretary, Franklin H. Wentworth, 40 Central Street, Boston, Mass.
 MAY 9-10.—BRYAN, TEX.
League of Texas Municipalities. Annual convention. Secretary, Frank M. Stewart, Government Research Division, Bureau of Extension, University of Texas, Austin, Tex.
 MAY 21-24.—MEMPHIS, TENN.
Southern Commercial Secretaries Association. Annual convention. Secretary, A. T. Felt, Alexandria, Va.
 MAY 21-25.—DETROIT, MICH.
American Water Works Association. Annual con-

vention. Secretary, J. M. Diven, 153 West 71st Street, New York, N. Y.
 JUNE 4-8.—NEW YORK, N. Y.

National Electric Light Association. Annual convention. Executive Manager, M. H. Aylesworth, 29 West 39th Street, New York, N. Y.

JUNE 12-14.—BUFFALO, N. Y.

Conference of Mayors and Other City Officials of the State of New York. Annual convention. Secretary, William P. Capes, 25 Washington Avenue, Albany, N. Y.

JUNE 18-21.—WICHITA FALLS, TEX.

Southwest Water Works Association. Annual convention. Secretary, R. D. Morgan, Mexia, Tex.

JUNE 20-21.—FARIBAULT, MINN.

League of Minnesota Municipalities. Annual convention. Executive Secretary, Morris B. Lambie, The Municipal Reference Bureau, University of Minnesota, Minneapolis, Minn.

NOVEMBER 12-16.—MEMPHIS, TENN.

American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box 234, St. Petersburg, Fla.

NOVEMBER 12-15.—WASHINGTON, D. C.

City Managers' Association. Annual convention. Secretary, John G. Stütz, Lawrence, Kans.

Little Pictures of Ominous Conditions

THE increase in America's waste by fire from \$353,878,876 in 1918 to \$495,406,012 in 1921 is graphically portrayed in the January, 1923, issue of *Safeguarding America Against Fire*, the bulletin of the National Board of Fire Underwriters of New York. Eighteen pairs of pictures are published, six of which are here reproduced, in which the recorded losses from certain specified causes are graphically shown. The totals of these recorded losses for 1921, according to the recently completed findings of the Actuarial Bureau of the National Board are:

STRICTLY PREVENTABLE CAUSES

| | |
|--|--------------|
| Defective chimneys and flues..... | \$14,801,581 |
| Fireworks, firecrackers, etc..... | 573,595 |
| Gas, natural and artificial..... | 2,213,440 |
| Hot ashes and coals, open fires..... | 4,327,268 |
| Ignition of hot grease, oil, tar, wax, asphalt, etc..... | 1,597,851 |

| | |
|---|------------|
| Matches—smoking | 25,992,033 |
| Open lights | 2,831,116 |
| Petroleum and its products..... | 9,420,843 |
| Rubbish and litter..... | 1,235,319 |
| Sparks on roofs | 11,458,220 |
| Steam and hot water pipes..... | 191,771 |
| Stoves, furnaces, boilers and their pipes.. | 13,910,531 |

PARTLY PREVENTABLE CAUSES

| | |
|---|-------------|
| Electricity | 12,723,209 |
| Explosions | 1,980,274 |
| Exposure (including conflagrations) | 62,912,566 |
| Sparks from machinery..... | 6,972,928 |
| Incendiarism | 2,488,976 |
| Lightning | 12,353,222 |
| Miscellaneous known causes | 7,705,196 |
| Sparks from combustion | 4,864,771 |
| Spontaneous combustion | 20,186,392 |
| Unknown causes (probably largely preventable) | 175,584,208 |

Total, United States.....\$396,324,810

It is customary for the Actuarial Bureau to add 25 per cent each year to cover losses unrecorded and uninsured. This brings the recorded total for 1921 up to an estimated total of \$495,406,012—which earns for the



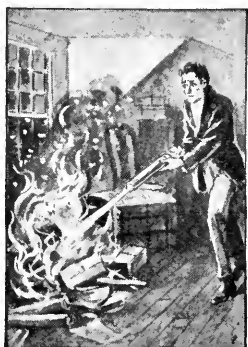
DEFECTIVE CHIMNEYS AND FLUES

Chimneys which are not tightly and solidly erected from base to cap are highly hazardous from the standpoint of fire



SPARKS ON ROOFS

Wooden shingles have figured in innumerable conflagrations. Metal, slate, tile and composition roofing are the safe and modern types



RUBBISH AND LITTER

Rubbish piles breed fire. Attics and cellars should not be made catch-alls. An extinguisher, kept handy, frequently will snuff out a small blaze



SPONTANEOUS COMBUSTION

Soft coal, in quantity should never be stored in contiguity to wooden fences or walks, because of the danger of spontaneous combustion



STOVES, FURNACES, BOILERS, AND THEIR PIPES

Furnaces should be so installed that at least 18 inches clearance is provided between the top and the nearest wooden construction



FIREWORKS, FIRECRACKERS, ETC.

If there must be an exhibition of fireworks, it will be safer if the affair is communized and supervised by uniformed firemen

United States the distinction, disgraceful enough, of suffering the largest fire loss, for a single *normal* year, that any people has ever had to bear since men first built cities.

In commenting on these figures, the National Board of Fire Underwriters says:

"Constructively utilized, such a vast sum as this would have built hundreds of schools and hospitals, both desperately needed; it

would have discharged somewhat more than half of the yearly interest on the mammoth public debt of the United States, so reducing taxes; it would have maintained the navy for twelve months, besides defraying all the costs of the Federal legislative department for a like period; it is a sum nearly double the total disbursements for Government pensions in 1921."

Is Your City Getting Ready for Arbor Day?

THE visitor to town or city gains his first and most lasting impression from the presence or absence of shade trees. The community with streets bare and bleak and shadeless is dismissed as an undesirable place in which to live, says Charles Lathrop Pack in "Trees as Good Citizens." Shaded streets and tree-clad lawns have a charm which often proves the deciding factor in influencing the home seeker in his choice of a place of residence.

Definite evidence of this is found in

Plant a Tree



I think that I shall never see
A poem lovely as a tree.
A tree whose hungry mouth is pressed
Against the earth's sweet flowing breast;
A tree that looks at God all day
And lifts her leafy arms to pray;
A tree that may in summer wear
A nest of robins in her hair;
Upon whose bosom snow has lain;
Who intimately lives with rain.
Poems are made by fools like me,
But only God can make a tree.

—Joyce Kilmer.

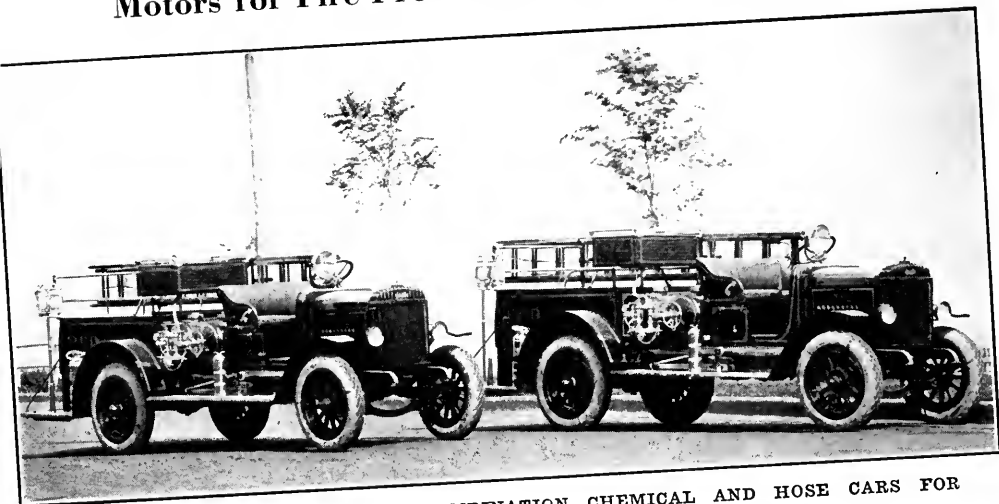
LET'S MAKE OUR CITY MORE BEAUTIFUL

Last year Dallas planted four times as many trees as it had any preceding season. Tree planting starts this month. For a small fee the City will furnish the tree, plant it, care for it save as to watering, and guarantee it. Telephone City Forester R. A. Gilliam at the City Hall.

DALLAS, TEXAS, BELIEVES IN TREE PLANTING

the increasing number of municipal shade tree commissions and city foresters and in the fact that Arbor Day has been definitely set in 39 states. It is also shown in the efforts of real estate men to give new property added beauty and attractiveness by the planting of trees. Experience has shown them that in the sale of homes in a new residence district trees are as essential as sidewalks and paving, and second only to sewer, water, gas, and electric connections.

Motors for Fire Protection and Street Cleaning



TWO NASH-PIRSCH DOUBLE-TANK COMBINATION CHEMICAL AND HOSE CARS FOR PARKERSBURG, W. VA.

These trucks carry 1,000 feet of 2½-inch fire hose, two 40-gallon chemical tanks, one 24-foot extension, and one 12-foot ladder, besides all the other small equipment usually carried by such trucks, including axes, crowbar, door-opener, and fire extinguishers



BAKER SNOW-PLOWS MOUNTED ON MOTOR TRUCKS HELP KEEP SALT LAKE CITY'S STREETS OPEN IN WINTER

During the early morning before automobiles appear on the streets, these plows are run three or four abreast through the main streets, clearing away the snowfall accumulated during the night. In this way it is possible to sweep the entire broad street in a few minutes and not allow the traffic to interfere in any way with the operation. This photograph, furnished by T. T. Burton, Commissioner of Streets and Public Improvements, Salt Lake City, was taken after a 10-inch snowfall had been pushed easily to the side of the road. It will be noted that snow can be seen over the tops of the 36-inch wheel where it has been pushed by the plow



A 5-TON FEDERAL TRUCK EQUIPPED WITH A CHAMPION SNOW-PLOW USED IN THE VICINITY OF DIAMOND POINT, N. Y., FOR REMOVING THE SNOW-DRIFTS WHICH HERETOFORE HAVE BLOCKED TRAFFIC



A 5-TON GARFORD MOTOR FLUSHER WHICH HAS SEEN FIVE YEARS' SERVICE TWELVE HOURS A DAY AND SEVEN DAYS A WEEK THROUGHOUT THE YEAR IN BEAUMONT, TEXAS. This flusher covers 70 blocks of pavement per day, and, according to George J. Roark, City Manager, does the work very satisfactorily

Chamber of ******* Commerce Activities in Public Affairs

The Chamber of Commerce and Public Health

By Dr. George E. Vincent

President, The Rockefeller Foundation, New York

WHAT can chambers of commerce do in their organized capacity with respect to promoting public health? In the first place, they must have special committees on public health. On such a committee there ought to be a man who is particularly interested. It might be a committee of three with two sick, and then be one of the most effective committees if there was one surviving member who had a keen, intelligent, persistent interest in this fundamental element of welfare in the community.

Now, what does this committee do? The first thing is to lay down the principle that telling the truth is good policy, even though the first results of telling it are not particularly gratifying. If there is any form of camouflage, if there is any form of deception, if there is any form of sticking your head in the sand which is despicable, it is concealing the facts in your community with respect to the actual conditions of public health.

The newspapers of the community ought to have the courage to publish the facts. And the chamber of commerce of the community, if there is any attempt to sidestep, to avoid the issue, ought to insist upon having the facts published, because you never get anywhere unless you are prepared to face facts and to face them courageously. As long as the community avoids knowing facts, a good many undesirable things can be tolerated. But, when the facts are known, some sort of social action is inevitable.

The first thing that your committee ought to know is, what is the general death rate? Then the second thing you ought to know

is, what are the diseases in the community which contribute to the death rate?

If you find, for example, that typhoid fever is playing an important part, you know that you have a bad water-supply, or that your milk is not being properly inspected. There is no other answer.

If you discover that you are below the general rate for municipalities in the registered area, your attitude ought not to be one of complaisance. Your attitude ought to be, "We have done better than other municipalities. Now we will go on doing better still, and show other municipalities what can be accomplished when a really enlightened and energetic and devoted community undertakes to make that city the healthiest place possible for all the men, women and children who live in it."

Another thing that the chamber of commerce can do, is to see to it that adequate appropriations are provided for public health administration. It is perfectly absurd to see the amounts that are provided in some communities. It is estimated that from fifty cents to one dollar per capita per year will provide a fairly good ordinary public health administration. What are you spending per capita in your communities? There is another question to ask.

What we need on the part of business men and chambers of commerce all over the country, in the field of public health, is the development of a scientific attitude. Put as much confidence in experts in the field of preventive medicine as you do in experts on finance, experts on banking, experts on railroads, experts in engineering,

in whose expertness and soundness and scientific training and careful application of that training to practical problems the whole fabric of our industrial and commercial life rests.

My plea is for applying the same principles to the well-ascertained facts of science with regard to preventive medicine, and to seeing to it that in every community in this country, men and women who have been trained properly to apply those principles are put in positions of security, where they can act courageously and effectively, with adequate public funds, and supported in crises and out of crises by an enlightened public opinion, which says, "We put our confidence in these people; we are prepared to follow their ideas, and we will support them generously in caring for the health of the community. We will, however, periodically call for an accounting, and ask them for the results which they have secured, and ask whether the death rate is being lowered; ask, if it is not being lowered, why it is not being lowered. In other words, as we trust them, we shall also hold them to account."

And then I hope, when you have meetings

of the Chamber of Commerce, you will get people to talk occasionally on public health, and that before inviting them you will inquire whether these people have any authority or standing in the field of public health, or whether they are simply interesting people who write good articles or make fluent after-dinner speeches and are more or less entertaining in relating irrelevant anecdotes, and are called inspiring speakers. Just inquire a little bit into their authority, into their background, into their standing, and if you will do that in all your communities, possibly there will be just a little more emphasis placed upon public health. If that is done, you will discover not only that the community has by so much made a step forward, but that all the other interests of the community have been affected; for health, not merely freedom from disease, but health in the positive sense of vigor and of energy, is one of the greatest assets of every community, and one of the greatest and most important conditions of a happy and contented life for the individual. Public health is a fundamental interest.

ACKNOWLEDGMENT.—From the stenographic report of Dr. Vincent's address before the Detroit Convention of The National Association of Commercial Organization Secretaries.

Business Organizations and Village Improvement

By ROSS B. JOHNSTON

Director of Publicity, West Virginia University

THOSE who live in the commercial centers generally understand and appreciate their dependence on farms and farmers for food, and most business men understand the importance of the country trade. Realizing these facts, associations of manufacturers, chambers of commerce, and groups of business men under whatever other name they may be associated, are becoming more and more interested in what is being done or can be done in country life improvement.

That the future citizenship of our cities and towns will consist, in a large part, of boys and girls now growing up in the country communities of our various states is vaguely understood. But some maps recently prepared in West Virginia showing

the migration of country boys and girls help us to a clearer realization of this fact. Whether these country communities are preparing boys and girls who will be strong, vigorous, forward-looking citizens of the future, or whether the migration from the country communities to the towns will be in considerable number illiterate, degenerate or unhealthy, is certainly a matter of real concern to the business men of the country.

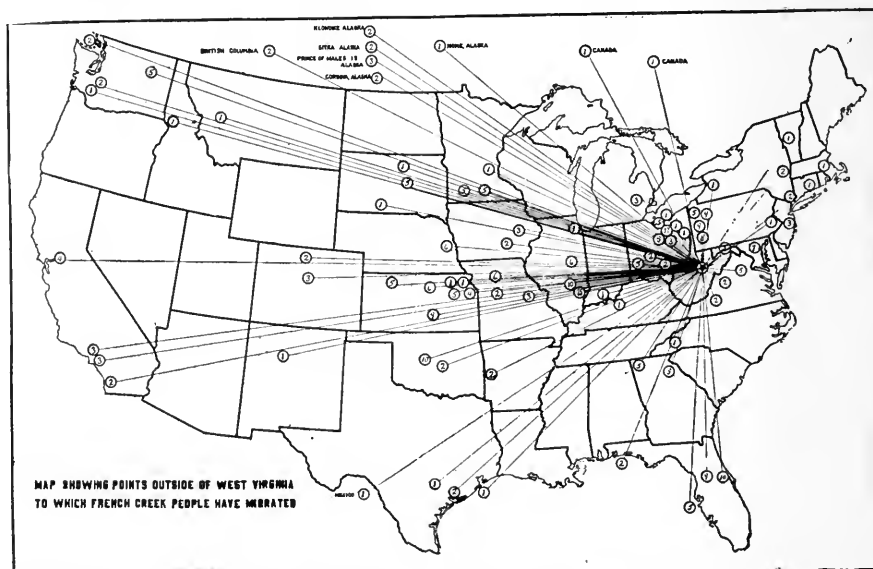
West Virginia is a good example of a state where the business interests have closely cooperated with the organizations that have done most among the country people. The state is carrying on a definite program among its rural communities which has already reached one hundred of the most progressive among the thousand country

communities found to exist there. Most of the communities worked in are fine places in which to live and bring up a family. But there are other communities whose problems are more difficult and which need encouragement and help from outside influences in bringing them up to the standards of the community leaders.

In the last ten years the Extension Division of the West Virginia University, in co-operation with such agencies as the State Sunday School Association, State Department of Schools, State Department of Health, Red Cross, Anti-Tuberculosis Asso-

communities to conduct country life conferences. Another circular suggests definite sources of information and inspiration and gives helpful pointers which, if followed, will enable the communities to raise their community score.

The young people's problems in these communities in West Virginia are being met through the organization of "4-H Clubs," or clubs in which the Head, Hand, Heart and Health of the boy or girl are considered; leadership for the 4-H Club program is being developed in the various county camps. In 1922 West Virginia began the



ONE METHOD OF MEASURING THE INFLUENCE OF A COMMUNITY ON THE COUNTRY AT LARGE

The little village of French Creek, W. Va., with a hundred inhabitants, has representatives in thirty states and eighteen counties, as this map shows. Does this indicate that more attention should be given the smaller villages of our country?

ciation, and others, has been developing a well-balanced program for the improvement of these country life conditions. One of the recent publications of the Extension Division suggests certain standards of living under ten headings, like citizenship, homes, churches, schools, business, farms, health, etc., with such definite values given to the different points as to constitute a country community score card.* This score card is used by the various teams of co-operative workers who visit the country

training of leadership for the county camps at Camp Stonewall Jackson, the State 4-H Camp near Weston, Lewis County.

The Weston Chamber of Commerce and other civic organizations have made definite contributions to this State Camp, as have also the Chamber of Commerce of Clarksburg and its other civic organizations. It is planned for each county to have a county cottage at this State Camp, and arrangements have already been made for cottages for Lewis, Harrison, Upshur, Webster and Marion Counties. The various chambers of commerce have definitely helped in the campaign for these cottages.

* Efforts will be made to supply any interested persons with copies of this score card as long as the supply lasts. Requests should be made to the Director, Agricultural Extension Division, Morgantown, W. Va.

The West Virginia Bankers Association and various other organizations of like nature have put money into the club work. Both the B. & O. and the C. & O. Railroad have offered liberal cash prizes for the best work in the clubs.

Nat T. Frame, Director of Agricultural Extension Work in West Virginia, in discussing what commercial organizations can do in West Virginia and other states to help build up better places in which to live in the rural communities, says:

"Commercial organizations, chambers of commerce and so on may help in building up rural community life by taking pains to learn facts about the whole country life program, and also to get a grasp of the philosophy underlying the whole movement, such as West Virginia typifies, namely, that through well-articulated cooperation between most of the state-wide agencies interested in rural affairs, the folks in the different country communities are led to understand and to accept certain simple and workable standards of living as goals. These standards are known to be workable because every standard adopted is in actual operation in some community in West Virginia.

"The folks are further helped to compare their own community standards with the possible score of 1,000 points, and appreciate wherein they are lacking. They are then inspired through the general part of the program to give to the communities such inspiration as will bring to bear on the solution of the community problems the dynamic force inherent in the religious life of most country people, which is too often lying dormant.

"The definitions of standards for assistance in scoring themselves may be made by outsiders who bring to the country communities a proper

understanding and sympathetic attitude, but the dynamic force for lifting the country community by its own boot-straps must come from within, and the real working leadership must come out of the farm folks themselves. No up-lift movement, coming out from the town to the country people in any way carrying any idea of condescension, will be of any positive assistance to the country people.

"Chambers of commerce, or whatever the organization may be, which believe that this country life program, as so briefly outlined, is based on correct philosophy and is deserving of backing, should not only give to the whole movement moral support, but should take all the proper steps to see that the State Sunday School Association, the State Health Department, the State Department of Schools, the Extension Division of the University, and all the other agencies which may cooperate in a state, receive the necessary contributions and appropriations for keeping up and strengthening the movement. It will take at least ten years, for example, even with an accelerated program, to reach all the rural communities of West Virginia.

"Every local business organization might well offer definitely to the farm bureau of its county, or under whatever name the farmers have organized, cooperation in carrying out the whole country life program in line with the general state plan. The farm bureaus in West Virginia can, for instance, generally use to advantage business men who can help with a musical program or can speak on citizenship or do other details definitely connected with the scoring and follow-up work of the various country communities in their particular counties. If the business groups have no committee for handling such cooperation, special committees are created for this purpose after a conference with the county agent, home demonstration agent and officers of the farm bureau or other farmers' organization."

A Well-planned Chamber of Commerce Building

ONE of the most artistic and conveniently arranged chamber of commerce buildings on the continent was opened recently to the service of the community by the Chamber of Commerce of Long Beach, Calif.

The following description will be of special interest to organizations planning a new home:

Viewed from Ocean Boulevard toward the main entrance, the edifice appears to be of one story only; it is, in fact, a four-story structure, counting the mezzanine floor, which is equal in size to the main

floor, except for the lobby and the lounge. Built on the brow of the ocean bluff, which slopes to the beach, the building has two floors below the main floor, and each of these two has entrances on the ground level, because of the decline to the strand.

On the Ocean Boulevard level are the offices of Executive Secretary Lynn W. Ballard and his private secretary. Near at hand is the information desk, presided over by the private exchange telephone operators. This desk is separated by a counter from the main and commodious lobby, which is lined with instructive views of the



Council Bluffs for example—

The "Caterpillar's" field of usefulness is by no means limited to road work. There is a "Caterpillar"* of size and capacity for every power need. On farm or ranch, in the mining, oil and lumber industries, for snow removal and other civic work—wherever power and endurance are at a premium, the "Caterpillar"* has no real competitor.*

M. B. O'Rourke, Street Commissioner of Council Bluffs, says: "After a thorough investigation, we selected the "Caterpillar"* for grading our dirt streets and alleys, many of which contain gumbo and other hard-to-move material. The "Caterpillar"* has accomplished more than we expected. Its short-turning radius enables us to grade our narrow streets, clean out ditches, and turn any place there is room to move the grader. Its positive traction means successful operation regardless of the soil or weather. We do not believe any other tractor embodies such elements of economy, power and speed." Your community should be "Caterpillar"*-equipped, whether your good-roads program involves the maintenance of streets and roads already built or the construction of new ones though the heavier operations of grading, scarifying and hauling material. The "Caterpillar"* also constitutes the one complete solution of the snow removal problem. Send for our booklet describing the many uses of "Caterpillar"* in public works.

**There is but one "Caterpillar"—Holt builds it.*

CATERPILLAR
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Montreal.



THE FOUR-STORY CHAMBER OF COMMERCE BUILDING—IN LONG BEACH, CALIF.

The two stories not shown in this picture are built on a slope at the rear to the ocean beach

city, enlarged photographs artistically arranged in panels. In the lobby are all conveniences for visitors, with writing desks, newspaper files and racks containing a great variety of folders furnishing general information. A large working space, arranged off the lobby, is devoted to the finance secretaries and general clerical forces. Another generous space is given over to the lounge, a restful chamber looking out over the ocean, which is only a stone's throw distant. This is a popular meeting place for ladies, members of various societies and clubs holding periodical meetings in the larger rooms.

On this main floor is also the office of the publicity and convention secretary of the Chamber of Commerce, who further serves as secretary of the Hotel and Apartment House section of the Long Beach Board of Realtors, one of the Chamber's numerous subsidiaries. Adjoining this office is that of the membership secretary.

The Industrial and Manufacturers' Bureau has a suite on the mezzanine floor, manned by a secretary and an assistant. Other bureaus housed in separate offices on

that floor are the Auto Trades, Furniture Dealers, Merchants, Advertising Club and Credit Association.

A directors' room having a seating capacity of 75 occupies one end of the mezzanine floor. Here the Chamber's twenty directors meet every Thursday morning, and here are held conferences by various other groups and organizations, which are given the accommodations free.

Storerooms, rest rooms and the balcony of the theater are located on the floor next below the main floor, while on the lower floor of the four-story building is the largest assembly room. It is a theater, with stage and moving-picture equipment; it is also a ballroom; it is a banquet hall with a capacity of 600 diners with complete culinary accouterment; it is a convention hall which can accommodate 700 people.

Every foot of space in the big building is taken up by Chamber of Commerce activities, with the exception of two office suites, which are donated to the American Red Cross and the American Legion.

The cost of the plant, including ground, building and equipment, was \$135,000.

Newark, N. J., to Have a Museum Building

The Newark Museum Association has received from Louis Bamberger, a local merchant, a gift of \$500,000 for constructing a building to house the Association's commercial, artistic and scientific collections. The museum is to be built on the site of a private residence, which has recently been purchased by the city for \$200,000. The donor will personally administer the fund up to the time the structure is completed and

ready for occupancy. As representative of the museum trustees he will handle all negotiations with the architects and builders, but all plans will be passed upon by the trustees. The Newark Museum was begun in 1909, under the direction of John Cotton Dana, Newark's City Librarian, its collections having been housed in the Public Library Building. More than 80 per cent of its exhibits are at present in storage.



Barber-Greene Bucket Loader owned by the Municipality of Tokyo, Japan

Replacing a Gang with One Man

Even in Tokyo, Japan, where shovel labor is cheap, Barber-Greenes are used by the municipality

loading the wheelbarrows and horse carts still commonly used in city work, Barber-Greene Bucket Loaders effect savings of men and money just as they do where motor trucks or industrial cars are used.

With a Barber-Greene loading stone, for instance, one man replaces an entire shoveling gang so effectively that the one supply, instead of being a drag on the work, becomes the pacemaker.

On a paving job in Oak Park, Illinois, in 1922 Barber-Greenes were used to load stone and sand; they were so effective that not a single shoveler was used—not even for cleaning up.

On paving Hillside Avenue, Hillside, New Jersey, one Barber-Greene replaced 12 shovelers in handling stone.

BARBER-GREENE COMPANY—Representatives in 33 Cities—515 W. Park Avenue, Aurora, Illinois

BARBER GREENE
 Portable Belt Conveyors  Self Feeding Bucket Loaders
Automatic Disc Feed of the B-G Loader

In Bartlesville, Okla., a Barber-Greene was used to load stone into horse carts on city paving work and did away with all stone shoveling at the storage piles. In Fremont, Ohio, last year 3½ miles of road 16'x6" with 4'x6" curbs were built in 24 days. All the stone used was loaded into wheelbarrows with a Barber-Greene Bucket Loader having a wheelbarrow hopper.

Because of the impending scarcity and high cost of shovel labor, more and more municipalities, townships and counties are adding Barber-Greenes to their road-building equipment. Model 42 is especially popular because it has a removable boom so that it can be converted into a snow loader in winter.

For additional particulars send for free book "Results on Road Jobs," 1923 edition.

Grand Rapids' Electric Railway Franchise

An Analysis of Its Provisions

By H. George D. Nutting

Consulting Engineer, Municipal Service Bureau, Grand Rapids, Mich.

RECENTLY the city of Grand Rapids voted on and passed a new street railway franchise which represents a modern example of cooperation between a city government and its local transportation system, to their mutual benefit.

The Grand Rapids City Commission has always recognized the fact that the city needs an efficient transportation system, and that to be efficient the transportation system needs the cooperation of the city.

The franchise is based upon the "cost plus" principle and contains the following provisions:

Charges at Cost.—All expenditures to be at actual cost to company or holding company.

Auditing Books.—City may inspect all books and records at all reasonable times. Monthly reports shall be made to City Manager. All books and records shall be kept according to rules of Interstate Commerce Commission and the Michigan Public Utilities Commission.

Amount of Guaranteed Extensions.—Company shall spend \$500,000 in extensions in 5 years, if requested by City Commission.

Changes in Transportation Art.—The franchise provides for future changes in the urban transportation art by permitting the company "to supplement or replace the same [trolley cars] with vehicles operated by their own power or by trackless trolley or otherwise."

Extensions of Service.—The city may order extensions of service or reroute the cars, after due notice and public hearing; provided that the company may appeal to a board of arbitrators appointed in the usual manner. Failure by the company to carry out the decision of the arbitrators may be penalized by forfeiture of franchise.

Financing.—Subject to approval of Michigan Public Utilities Commission. City must receive notice and may be represented at hearing.

Budget.—Before December 31 each year company to submit statement to city showing for the approaching year:

1. Anticipated revenues
2. Anticipated cost of operation
3. Proposed charges to capital account
4. Proposed charges to depreciation account
5. Contemplated improvements

No expenditures to be made or plans to be carried out until approved by City Commission. Subject to arbitration in case of disagreement.

Charges to Accounts.—Commission may review charges to accounts and may order changes. Subject to arbitration if contested by company.

Operating Rules and Schedules.—Subject to approval of City Commission and to arbitration in case of disagreement.

Carrying Freight.—Company may carry baggage, freight, mail, etc., subject to approval of City Commission.

Free Fares.—No free service of any kind to any person, organization, association or corporation except to company's officers and employees and to members of city Fire and Police Department in uniform.

Utility Service Pipes.—Tracks and road-bed shall be laid "subject to rights of city." Water, gas or other companies, or individuals who shall dig up the street or in any manner interfere with the track or road-bed of railway company shall restore same to former condition.

Repairs to Road-Bed.—If company unreasonably and wilfully neglects to repair track and road-bed, city may, after 30 days' notice, make the repairs and charge railway company including 6 per cent interest after payment is demanded. If payment is not made in one year, franchise may be forfeited. Company must get permission from City Commission or City Manager before tearing up street.

Paving Between Tracks.—Company must pave and keep in repair "as the City Commission may direct," between tracks and to a point 12 inches outside of outer rails. "This provision, or any portion thereof, may be waived by the city, provided that the city charter shall have been before that time amended so as to permit the same." Railway may pay costs of paving in installments in the same way as abutting landowners.

Electrolysis.—Railway company must maintain an electrolytic mitigating system satisfactory to City Commission.

Value of Property.—Value of property used and useful in "local city service" is fixed at \$5,500,000 as of January 1, 1922. This is base valuation.

Additions to and Deductions from Valuations for Rate-Making.—From time to time add to base valuation all additions to property and deduct retirements which have been charged off to depreciation.

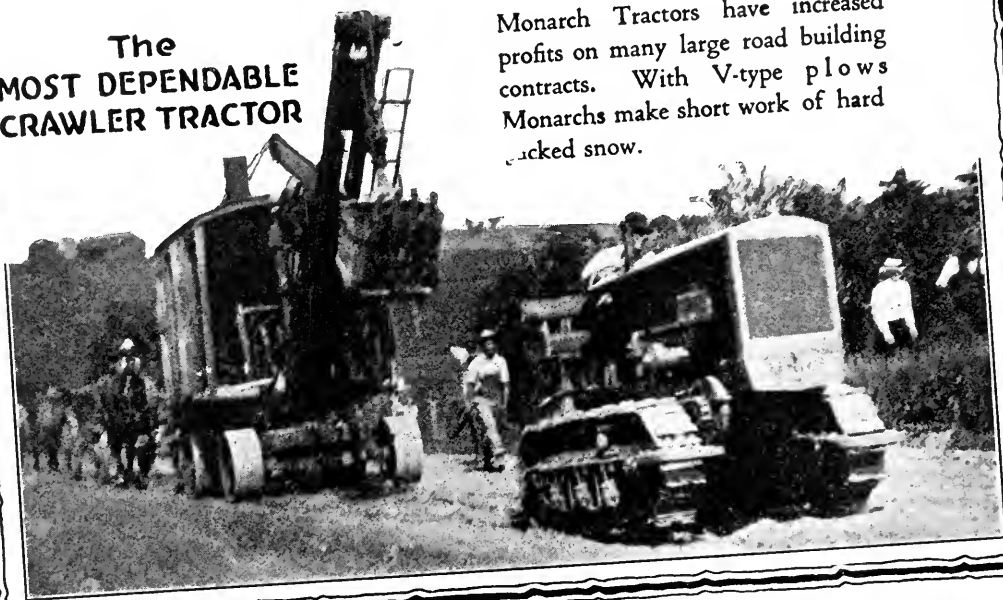


MAKES GOOD ROADS *The* **MONARCH** KEEPS ROADS GOOD

The outstanding service of Monarch Industrial Tractors in grading, resurfacing and maintenance, three hundred and sixty-five days a year, makes this super-tractor worthy of the most careful investigation of every road superintendent and contractor. It is the ideal size to handle all kinds of road machinery under all operating conditions. "Monarch Facts" tells what Monarch Industrial Tractors are doing. May we send you a copy?

The MOST DEPENDABLE CRAWLER TRACTOR

Monarch Tractors have increased profits on many large road building contracts. With V-type plows Monarchs make short work of hard packed snow.



MONARCH TRACTORS INC

WATERTOWN, WISCONSIN

When writing to Advertisers please mention THE AMERICAN CITY.

Depreciation on Property in Service October 31, 1920.—Charged to "depreciation account" at appraised value of each item as included in the original cost appraisal, plus $7\frac{1}{4}$ per cent, which is the average difference between appreciation and depreciation (not including land and right of way) arrived at in the final agreement on valuation. Depreciation on property put in service after October 31, 1920, charged at actual cost.

Revaluation.—After five years company or city may request revaluation. Arbitrated in case of disagreement. Further revaluation permitted in not less than one year after previous valuation. Revaluation shall be new basis for rate-making.

Depreciation Account.—Account opened January 1, 1922. Company shall charge to operation monthly, and credit to depreciation account "an amount sufficient to maintain against depreciation including physical decay, obsolescence, use, injury, damage and deterioration of any kind not made good by repairs or maintenance ordinarily charged to actual operating cost, its presently owned depreciable property and all depreciable property hereafter acquired." Rate of depreciation 3 per cent per annum on the "then value of the valuation agreed upon herein for rate-making purposes," subject to change by mutual agreement or by arbitration. Amounts required to make good actual depreciation of property (that is, actual replacement) shall be charged to depreciation account (less any salvage value received). In case of sale by company to city or to any other purchaser, the "entire balance in said account, however represented, shall be taken over by the city or the purchaser without further payment than the consideration paid for grantee's property." "After the expiration of this franchise, grantee, its successors or assigns, shall be entitled to claim a return on depreciation account, and all earnings upon depreciation account shall be placed to credit of same."

Automatic Fare Equalization Account.—Company to open a book account called "Automatic Fare Equalization Account." Company shall credit this account with all earnings from operation and all other sources (including earnings on the net balance in said account), in excess of actual cost of operation, and shall debit this account with the return allowed under this franchise. Whenever net debit to this account shall exceed \$50,000, the next higher rate of fare and the next lower rate of return shall become effective. Similarly, the rate of fare and the rate of return shall be stepped up and down, respectively, for each \$50,000 net debit until the debit is wiped out. Whenever the net credit to this account exceeds \$50,000, the next lower rate of fare shall become effective, and so on, for each \$50,000 increase in the credit to this account. Company may fail to debit this account with the full allowable rate of return if in its judgment an increase in fares will reduce its gross earnings, but it may take advantage of this voluntary failure at a later date. Tickets outstanding at time of fare changes shall be redeemed at price at which they were sold.

Fares.—Fares may be such that (together with all other earnings) they shall give a reasonable return on the value of the property used and useful in rendering the service. Costs allowed shall be operating expenses, maintenance, taxes, insurance, damages, repairs, replacements, depreciation, obsolescence, expenses of valuations, city supervision expenses, and every other cost and (or) any reserve property accrued. Initial rate of return allowed is 8 per cent per annum. Rate of return shall be decreased $\frac{1}{4}$ of 1 per cent for each step of fare increase. When the cash fare is less than 5 cents, the return shall be increased $\frac{1}{4}$ of 1 per cent for each step of fare reduction.

Transfers Privileges.—One fare shall entitle holder to transfer from any place in the city to any other place in the city on company's lines.

Fare Schedule.—Initial fare 10 cents each; seven tickets for 50 cents. Rate of fare shall be increased or decreased in fixed steps as follows:

| | | |
|-------------------|----------------|----------|
| 5 cents cash and | 13 tickets for | 50 cents |
| 5 cents cash and | 7 tickets for | 25 cents |
| 5 cents cash and | 6 tickets for | 25 cents |
| 5 cents cash and | 11 tickets for | 50 cents |
| 5 cents cash | | |
| 10 cents cash and | 5 tickets for | 25 cents |
| 10 cents cash and | 9 tickets for | 50 cents |
| 10 cents cash and | 4 tickets for | 25 cents |
| 10 cents cash and | 7 tickets for | 50 cents |
| and so on. | | |

Maximum allowable fare 10 cents straight. Special weekly or monthly tickets giving special rates allowed, subject to consent of City Commission, and without discrimination.

Purchase of Property by City.—After 15 years and at end of any 5-year period thereafter, or by forfeiture, city may purchase property including "such amount as may stand to the credit of the equalization account," on the basis of the basic valuation and the terms of the franchise.

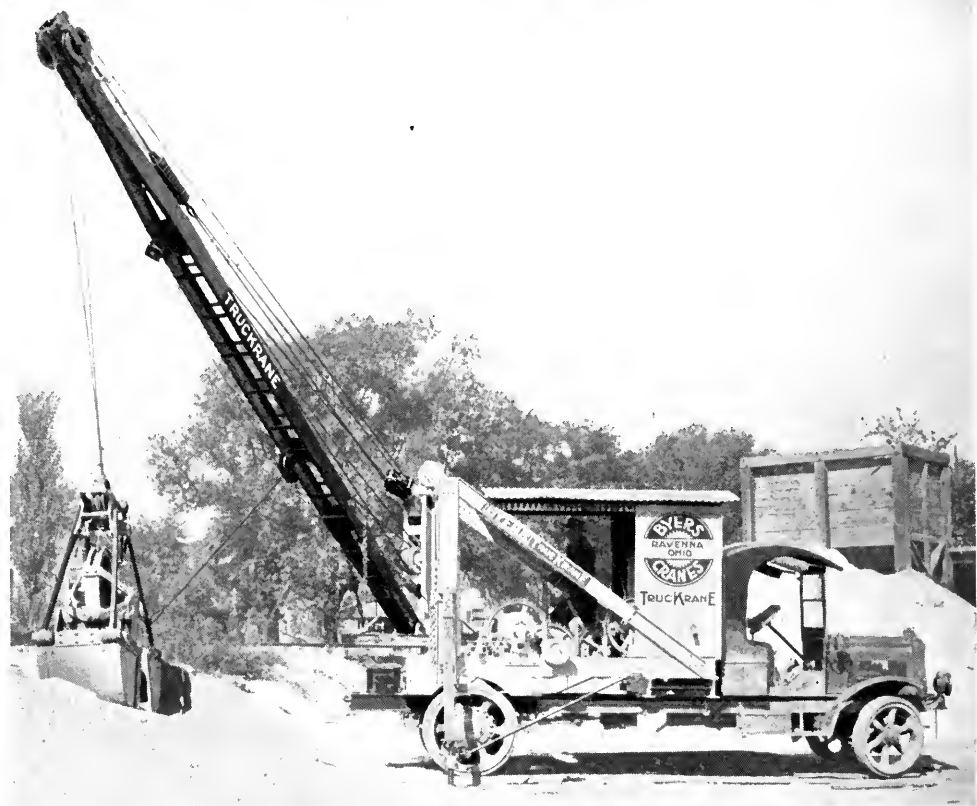
Price to Be Paid.—Deduct from rate-making value whatever amount standing as a credit to the depreciation reserve has been invested in the property, and to this net amount add 10 per cent of "such value" (except in case of forfeiture). Nothing shall be added for going or franchise value.

Termination of Franchise by Lapse of Time.—If city does not elect to purchase, City Commission may provide that company may sell property at the price provided for herein, and grantee shall have right to operate "under the terms of such reasonable franchise as the city may adopt" until the city is ready to acquire same. In case of default city may take possession of property "during such interval."

Reimbursement for Valuation and Franchise Expense.—Company to pay city \$14,060.65. Company shall annually pay to city costs of city supervision. Amount subject to arbitration.

Joint Use of Property.—City Commission may refuse or permit joint use by any other public utility, on reasonable terms. Subject to arbitration in case of disagreement.

Forfeiture of Franchise.—City may revoke by wilful violation of franchise provisions, by



**Start It Handling Any Loose Material
---Then Watch Things Begin to Move!**

TRUCKCRANE'S long, nimble boom can make the complete round trip—in empty and back loaded—every 20 to 30 seconds; and the special Byers Bucket takes a liberal half-yard at every grab. That means an empty gondola and a mounting stockpile at a rate you may have never thought possible!

Truckcrane is a portable crane of powerful, sturdy construction, mounted on a motor chassis. We furnish the crane, you furnish the truck—any truck, second-hand or new, of 5-tons' capacity or greater, measuring 9 feet 6 inches or more from back of driver's seat to center of rear axle.

Truckcrane is easy to buy, handy to operate and profitable to use. Interesting literature gladly sent you.

Sales Agencies Everywhere

THE BYERS MACHINE COMPANY

165 Sycamore Street,

Ravenna, Ohio

TruckKranE

grantee after notice and hearing, or through the courts.

Injuries and Damages.—Company shall hold city harmless from claims.

City Charter Provisions.—Made a part of franchise even though not specifically mentioned.

Arbitration Provisions.—Arbitrators chosen as follows: Within ten days party claiming arbitration shall name an arbitrator. After ten days' notice other party shall name an arbitrator. Within ten days thereafter the two shall select a third arbitrator. In case two arbitrators do not agree on a third one, either party may apply to the Judge of the U. S. District Court of Western District of Michigan, the Judge of the

Eastern District or one of the Judges of the Court of Appeals, and such judge may appoint third arbitrator. In case either party fails to name arbitrator as provided, it shall forfeit its right and order of other party shall be final. Arbitration shall proceed under Chapter XLV Act 314 of Public Acts of Michigan, 1915. Appeals shall be made to the Superior Court of Grand Rapids.

Strikes and Lockouts Interfering with Public Safety and Convenience.—At request of company or employees, City Commission may request arbitration in regular way.

Length of Franchise.—30 years after approval by voters. The franchise is not assignable.

A Criticism of the Grand Rapids Franchise

WHEN the franchise which is analyzed in the foregoing article was under discussion in Grand Rapids, prior to its adoption, the following comments on some of its provisions were made by Delos F. Wilcox, the well-known public utility expert, in a letter of which he has sent a copy to THE AMERICAN CITY:

"1. In so far as it is possible to be done, the franchise is made perpetual subject only to the contingency of purchase by the city or some other grantee at the price fixed under the grant plus a bonus of 10 per cent. The company is given the right to use any or all of the streets of Grand Rapids for street railway purposes, subject to the City Commission's "right to consent" to extensions, and the company may, apparently at its own pleasure, abandon street railway service and substitute therefor vehicles operated by their own power or by trackless trolley or otherwise.

"2. Initially the city government abdicates the police power and consents that it shall be exercised through the process of arbitration in which the company, which is to be regulated, has the same voice as the city, which is to regulate. The arbitration provision is sweeping in its language. The ordinance contains no declaration of the general purposes of the grant, no general rules by which the arbitrators may be guided, and no statement that the public service is the paramount consideration.

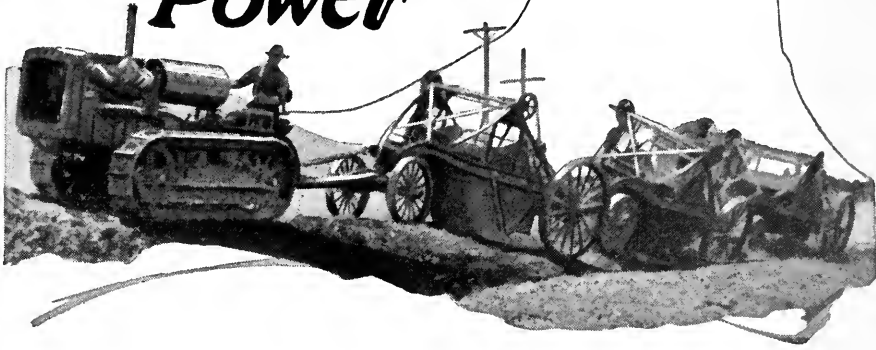
"3. The company is given a virtual guaranty of 8 per cent per annum on the valuation for the period of thirty years, subject to its ability to earn that much at a cash fare of 10 cents and a ticket fare of 7-1-7 cents. If the fare is increased to a straight 10 cents with no reduction for tickets, the company will still be entitled to 7¼ per cent, and in either case it will be

authorized to manipulate its charges to the equalization account, with the Commission's approval, so that if the traffic in any particular period will not bear these heavy capital charges, they may be deferred and cumulated as a potential charge against earnings to prevent any reduction in fare within the next thirty years until the 8 per cent or 7¼ per cent, as the case may be, has been made up in full. With such a guaranty the rate of return, as I understand it, will be nearly twice the rate of interest paid by the city on its bonds. With the security offered by the franchise, the capital required for street railway purposes in Grand Rapids during the next thirty years ought certainly to be procurable at less than 6 per cent. It is of the utmost importance, in the street railway business, that capital charges shall be kept down to the lowest possible minimum. A street railway does not perform the service for which it is permitted to occupy the streets unless its service is cheap. Low rates are essential from the public point of view, and even from the company's point of view, if it cares about developing traffic.

"Of course, I recognize in this franchise many provisions which reflect a laudable effort to protect the public interest so far as that can be done without hurting the company, but on the whole I cannot escape the conclusion that the men who drafted this franchise in the main lost sight of the fact that in the street railway business the public interest is paramount, and on the contrary were controlled by the conviction that the interests of capital are supreme, leaving the car-riding public and the employees who operate the cars to get what crumbs of comfort they can after the investors have made their 8 per cent. Such a point of view, in a matter like this, is shocking to the sense of civic responsibility which every city government owes to the people."

EDITORIAL NOTE.—Mr. Nutting will be given an opportunity, in the April number of THE AMERICAN CITY, to reply to Dr. Wilcox's criticism of the Grand Rapids franchise, and a rebuttal by Dr. Wilcox may be expected also.

Dirt-Moving Power



NEW OWNERS of the BEST TRACKLAYER quickly discover that this tractor has great tractive power enabling it to perform earth-moving tasks economically.

S. S. Payne, Street and Water Superintendent of Comanche, Texas, writes of the BEST 30 TRACKLAYER TRACTOR (the smaller BEST) as follows:

"I never dreamed that so much power could be developed by a piece of machinery no larger than your Tracklayer.

"The manful way it walked off with that nine foot blade buried with almost solid rock was a sight to please the eye of any dirt mover."

THIS SURPLUS OF POWER built into all BEST TRACTORS is the direct result of years of study and experiment by an organization devoted exclusively to the production of tractors.

BEST TRACTORS are available in two sizes—the 30 and the 60. Investigate them and you will find they can reduce costs on earth-moving jobs for you.

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BEST TRACTORS

Use and Abuse of Systems of Separate Sewers and Storm Drains---Can Their Failure Be Prevented?

By Harrison P. Eddy

Metcalf and Eddy, Consulting Engineers, Boston, Mass.

THE object of this discussion is to present in a forcible manner the present status of many of the systems of separate sewers and storm drains in this country, to sound a note of warning against a continuance of abuses now more or less generally prevalent, and to offer some suggestions which, in so far as they may prove practicable of adoption, may restrain misuse and thus tend to avert a general condition that appears to the author in some specific cases to be little short of an engineering calamity.

A committee of the Sanitary Engineering Section of the American Public Health Association has presented the following definitions:

"A separate sewer is a sewer intended to receive domestic sewage and industrial wastes without the admixture of surface or storm water."

"A storm drain is a conduit for carrying off surface water and storm water."

"A combined sewer is a sewer intended to receive domestic sewage, industrial wastes and surface and storm water."

Use of Systems of Separate Sewers and Storm Drains

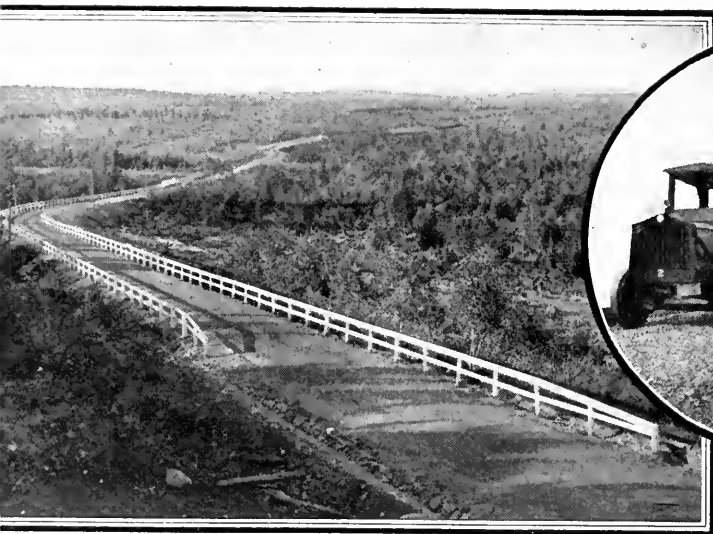
It is not necessary to discuss at length the reasons for the adoption of separate systems or of the combined system. In 1913, Professor John H. Gregory read an admirable paper entitled "Separate and Combined Sewers in Their Relation to the Disposal of Sewage," in which he said, "... no hard and fast rules can be given for the adoption of either the combined or the separate system. Each has certain advantages. These as well as local conditions and cost of construction and operation must be taken into account. Other things being equal, especially as more and more attention is being given to the question of sewage disposal, the separate system seems to offer advantages. With either

system, however, to secure satisfactory results, too much stress cannot be laid on the necessity of not only proper design but satisfactory maintenance and operation."

Since Dr. Rudolph Hering made his report to the National Board of Health in 1881, the separate system of sewers has had a very large growth in popularity and has been rather generally adopted. No doubt, separate sewers have been built in many small communities where sewerage could not have been provided had only the more expensive combined sewers been available. Separate sewers have been built also in a number of larger cities, such as New Orleans, Los Angeles and Baltimore, and, in a few cases, as in Boston and Worcester, portions of the existing combined system have been paralleled with separate sewers, and the building connections have been continued in use as storm drains.

The increase in the number of small villages, towns and cities, many of which have grown up on small streams affording comparatively little dilution for sewage, and the heavy financial burden of providing necessary public works of various kinds, have caused separate sewers to be viewed with much favor. In many cases neglect or postponement of provision for prompt removal of storm and surface water, while offering a happy solution of immediate financial problems, may have been a policy of doubtful merit.

While some of the views held from 30 to 60 years ago regarding the relation of sewage and sewer air to health have been modified or found to be altogether untenable, sewers are to-day generally regarded as necessary for the maintenance of the public health as well as for the public convenience. Very properly more weight is now given to the latter than was the case formerly. There is no doubt, also, that the prompt disposal of storm and surface water



Above—Auto truck spreading
"Tarvia-X."
Left—Amassa Road, Crystal
Falls, Mich. Typical of
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For Tarvia roads are not only firm, smooth, dustless and mudless all the

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The granular surface of a properly constructed and properly maintained Tarvia road prevents skidding.

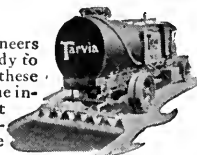
"Tarvia-X" is a dense coal-tar preparation which has been proved by experience to be the most durable bituminous binder for road construction. Other grades of Tarvia are made for preserving and patching all kinds of hard surface roads.

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has a beneficial effect upon the public health.

Other elements of cost enter into a proper comparison of the merits of separate and combined systems than the mere cost of the common pipe lines in the highways. Too often comparisons of relative cost have been based upon the bare cost of such sewers, the collateral cost to other municipal departments and to property owners for duplicate connections or other means of disposal of surface water having been disregarded. The inconvenience due to inadequate provision for disposal of storm and surface water has often been given little consideration.

The construction of a system of separate sewers without a system of storm drains, or with only a partial one, has become common practise in small communities and is somewhat prevalent in the larger cities. This has been based generally on economic necessity, either real or fancied.

Abuse of Separate Sewers and Storm Drains

It has been found impossible to entirely prevent the connection of roof leaders to storm-water drains. In a paper entitled "Prevention of Misuse of Sewers,"* W. H. Dittoe has stated clearly the manner in which storm drains and sewers are being misused, as follows:

"Sewers are designed for definite purposes, and if used for other purposes are being misused. Storm drains are misused if receiving sewage, industrial wastes or other wastes of objectionable character. Combined sewers are properly used when removing all classes of liquid wastes, but are misused if receiving industrial wastes affecting sewerage systems or processes of sewage treatment. Sanitary sewers, as the name implies, are for sanitary purposes only, and are misused if they receive drainage from the surface and roofs, subsoil drainage such as may be admitted by building foundation drains and through open or leaky joints, and industrial wastes of a character to affect the sewage or treatment processes."

Combined systems with intercepting sewers and storm overflows permit the discharge of sewage mingled with storm water through such overflows into water-courses. In general, the total quantity of sewage (not including storm water) thus

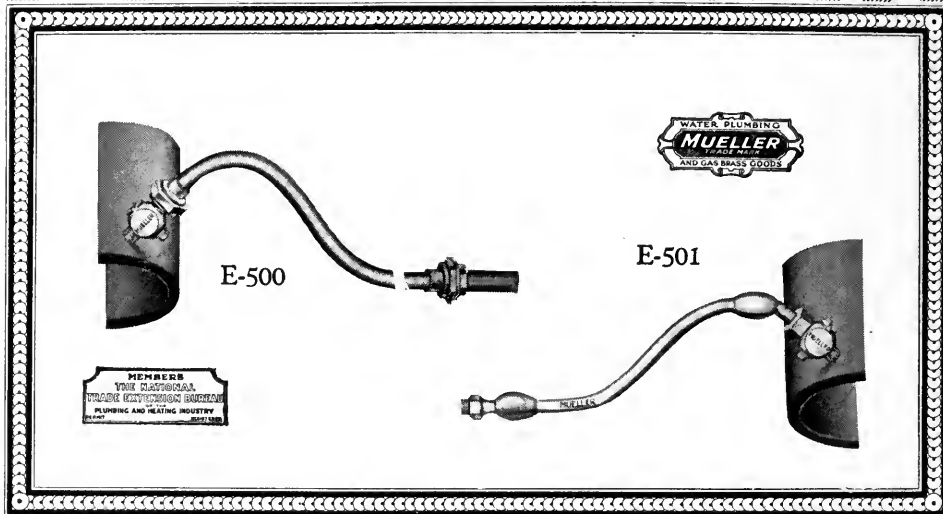
discharged probably aggregates from 2 to 5 per cent of the total quantity produced during the year. One of the important objects of separate sewers is to prevent this periodic discharge of sewage into small streams and bodies of water.

In many cases, however, sewage is discharged into storm drains through incorrect house connections, and even through common sewers which have been connected with storm drains. This in greater or less measure, as the case may be, defeats one important object of the adoption of the separate system in preference to the combined system. Such discharge is not confined to periods of storm, but is continuous and may readily constitute a greater source of pollution and offense than sewage discharged from combined sewer overflows in times of storm. Only from 2 to 5 per cent of the building connections wrongly made would be required to provide a quantity of sewage equal in the aggregate to that discharged from combined sewer storm overflows. In many cases the continuous discharge of sewage from even a smaller proportion of the houses would constitute a great source of annoyance on account of its discharge in dry weather and at times of low stream flow.

Great annoyance and damage have resulted from the discharge of storm and ground water into separate sewers. This occurs through the connection with the sewers of roofs, street inlets and foundation and cellar drains, and in some cases even small brooks. Sewers are sometimes so poorly built that they receive large quantities of ground water that should be cared for by natural channels or storm drains. Even where the sewers are most carefully built to exclude extraneous water, the house connections are often so improperly made that large quantities of ground water find access to the sewers, thus nullifying the effort and money expended in securing excellence of workmanship in their construction.

The results of such abuses have been serious in many places. In others, however, the ill effects have not yet been so important, because the improper connection of roofs and inlets and the faulty workmanship upon sewers and house connections go on gradually, and considerable time may be required for their cumulative

* Proceedings American Society of Civil Engineers, Vol. xlvii, p. 642.



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effect to become such as to cause damage and demand public attention. The effect of such abuses is destined to increase greatly as time goes on.

In one case a city has been compelled to approximately double the size of its sewage treatment plant, solely because of the admission of water to separate sewers. The sources of this water were many, including defective house connections, street inlets, perforated manhole lids (particularly within street car tracks), and abandoned house connections which were not sealed when buildings were burned or removed.

One of the most important sources in this case appears to have been wet cellars from which water was drained to the separate sewers through the clean-outs in cast iron soil pipes laid below cellar floors. There are many buildings located on side hills, in some of which there is ledge. During and after rains, large quantities of ground water enter the cellars, and the owners, or tenants, remove the caps from clean-outs and allow the water to drain out. In some cases the clean-out caps have been left out continuously.

So large a quantity of water is admitted to the separate sewers in this city that the trunk sewer some three miles long is often overtaxed, and occasionally the sewage has escaped through the manhole covers into the streets and run over the ground into a neighboring water-supply reservoir, which, finally, was protected by sand filters built to receive the sewage before it could reach the reservoir. The trunk sewer should be augmented now, although it is of ample size to serve the city adequately for many years to come were it not for this abuse of the separate sewers.

Considerable money has been expended in an effort to remedy the defects in this system. Street inlets have been disconnected, perforations in manhole covers have been closed by means of rivets, abandoned house connections have been sealed, and one sewer has been rebuilt, but the net result of this work has been small. It is practically impossible to correct many of the defects. Fortunately the growth of the city has been comparatively slow and the separate sewers are serving a useful purpose notwithstanding their defects. However, from the point of view of the service which might be rendered by the

system under reasonably favorable conditions it has failed in large measure.

Probably few systems of separate sewers have been so designed that they can receive the roof water from more than about 1 per cent of the tributary houses without being surcharged at times of intense downpours after the districts they are to serve have been built up to the extent contemplated in the design. If there are also other sources of admission of water, such as street inlets and perforated manhole lids, the number will be correspondingly less.

In some places the sewers have been surcharged to such an extent that sewage has flowed back through house connections into the cellars, while in others it has escaped through manhole covers into the streets. Just how far such conditions can be tolerated without justifying the statement that the sewer system is a failure, is a debatable question.

In a certain city a very large number of incorrect house connections to separate sewers and storm drains were found in one district comprising only about 300 acres. The authorities made a strenuous effort to have the errors corrected by the property owners, with the result that nearly all, but not all, the required changes were made.

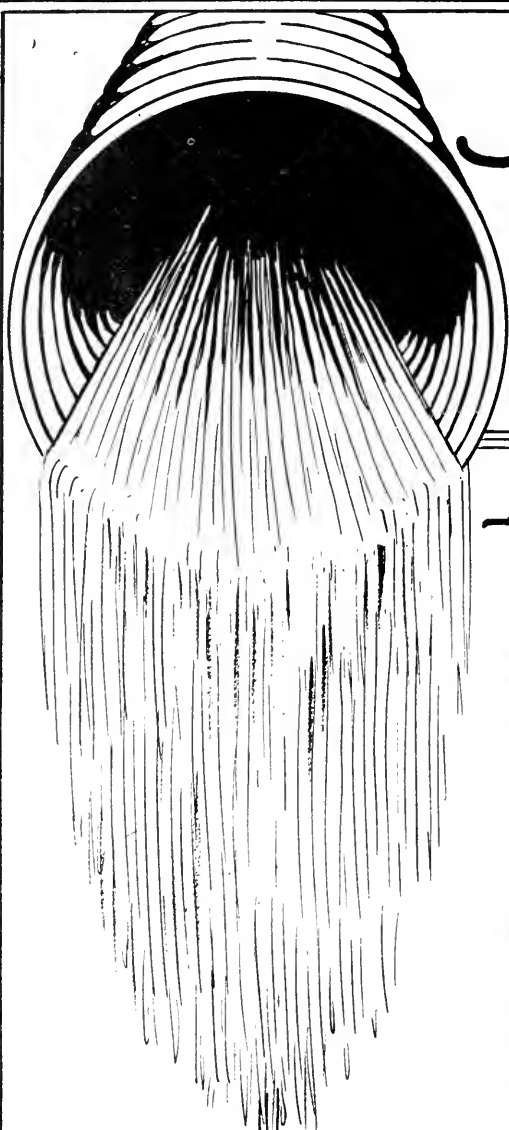
Such abuses may ultimately require enlarged treatment and pumping plants, increased operating expenses and the augmenting of the sewer systems, by relieving first the main sewers, and later the submain sewers and perhaps even the lateral sewers.

It is believed that these are not isolated cases and that these conditions are rather general. On the other hand, some systems have been satisfactory. This is probably particularly true in very small, slow-growing communities and where the local administration has been good.

Causes of Misuse of Separate Sewers and Storm Drains

The principal causes of the misuse of separate sewers and storm drains may be grouped in six classes as follows:

First, ignorance of the purpose and objects of the sewers and drains is an important cause of their misuse. This ignorance is often due to lack of proper instructions from those designing the sys-



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tems. It is due also in many cases to frequent changes in administration, as a result of which officials many times are entirely ignorant of the intent and plan of the systems. Sometimes many, or all, of the records and drawings are lost or have never been properly filed for available use in the municipal offices. In such cases, whatever knowledge there may be is often lodged in the minds of a few tradesmen, such as building contractors and plumbers. In some places this knowledge is a portion of their stock in trade. They make the connections for the building owners, sometimes in the cheapest possible manner, regardless of known proprieties, and in others incorrectly, through ignorance.

Second, misuse has arisen also from indifference of municipal officials. In one instance coming under the author's observation, the city officials having jurisdiction over the making of house connections and the operation and maintenance of the sewer and drainage systems, apparently made no effective effort to secure correct connections, notwithstanding that they were formally notified of the intended use of the sewers and drains, of the fact that connections were being improperly made, and that a continuance of the existing policy would thwart the plan adopted for maintaining the natural watercourses in a clean, presentable condition, and would result in the surcharging of the separate sewers and in injury to property due to flooding, for which the city might be legally liable in damages. Such indifferences may arise from many causes, some of which naturally fall under the other groups herein discussed. Probably the most important is the lack of moral stamina to require the making of proper house connections by building owners notwithstanding their protests urged as a matter of personal privilege.

Third, lack of authority to enforce suitable regulations has been a cause of misuse in some instances. Where there is no state law or municipal ordinance, the city official having jurisdiction must assume the authority, which requires a strong personality. An official assuming such authority will often find himself without the support of superior officials.

Fourth, favoritism or "pull" has undoubtedly played an important part in per-

mitting the making of incorrect house connections. While the relative number of cases which can be so classified may be small, their existence tends to undermine the authority conveyed by law or assumed by the official in charge. If there is precedent for disregarding regulations, many requests for such privilege are likely to follow. It is cheaper to lay one connection than two. A building may be provided with a sewer connection, and later the discharge of roof water onto the ground may become a cause of annoyance. It is obviously a simple matter to discharge this roof water into the soil pipe connected with a separate sewer, and the owner is likely to feel that it is a great hardship to be obliged to lay a new connection all the way from his roof water pipe to the public drain. Additions to buildings frequently require the disposal of surface water. These additions may be very small, such, for example, as a bay window or a piazza, and the official who has the moral stamina to require the owner to lay a drain to the public sewer for the purpose of serving such a small addition, is likely to be severely criticized by the owner.

Fifth, surreptitious connections undoubtedly have been an important cause in the misuse of sewers and drains. In many cases, particularly in times of high cost of construction work, building owners undertake to make certain improvements or repairs directly or through the employment of journeymen mechanics. Often, too, it happens that such mechanics are the owners of buildings, and it is natural for them to do their own work where practicable. Over such work the city officials have no control, as application for permits is not made. Building owners are often annoyed by surface or ground water where no drain is available for its reception. Explanation and argument on the part of the city official usually afford the owner little satisfaction. This is particularly true in cases where he has paid the same sewer assessment as his neighbor in front of whose property the storm water drain was constructed. The owner who lacks the drainage facilities is certain to feel that he has been inequitably treated, and there is no doubt that in many cases he has attempted to square accounts by making the needed connection with whatever pipe was avail-



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able and without the knowledge of the officials. The discharge of cellar drainage through the soil pipe clean-outs has already been discussed.

Sixth, in a relatively few instances misuse has undoubtedly been due to incorrect connections made through error. In some cases the pipes between the building and the public sewer are laid in advance of the installation of plumbing. Later, the plumber may readily mistake the sewer connection for the drain connection and

transpose the tributary pipes within the building. In other cases the plumbing is first to be installed and the drain-layer may erroneously connect the soil pipe with the drain, and the roof water system with the sewer. Probably such errors constitute the least serious of the causes of improper connections.

ACKNOWLEDGMENT.—From a paper read before the 1922 convention of the American Society for Municipal Improvements.

(To be concluded in the April issue of THE AMERICAN CITY)

Washington's Safety Week Parade

By H. T. Baldwin

Specialist in Exhibits, United States Department of Agriculture

ONE of the features of Washington's recent Safety Week was a parade which included more than 80 floats, bands, platoons of marchers, etc., contributed by government departments, civic associations and business concerns of Washington. As cups and prizes were offered for the best floats and groups of marchers, the competition was keen and there were some well-designed floats.

Most of the floats presented some phase of safety on the streets, showing disastrous results of carelessness on the part of pedestrians, drivers of automobiles and others. Other floats showed safety work carried on by various government departments, such as "Safety on the Sea," presented by the

United States Shipping Board, "Safety in the Mines," by the Department of the Interior, and "Safety in the Forest," by the Department of Agriculture. The parade was one of the most striking ever witnessed by the writer, and in addition to being entertaining it gave to the onlookers many valuable lessons.

Incidentally, during Washington's Safety Week only two deaths by accident were reported, whereas the average number of deaths had been six during each week. That permanent benefit has resulted is shown through the fact that a Permanent Safety Committee has been organized to keep up the good work in Washington. Its offices are at 14th and G Streets, N. W.



PRIZE-WINNING FLOAT OF U. S. DEPARTMENT OF AGRICULTURE, WASHINGTON SAFETY WEEK PARADE



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It will interest you to know that —

Motion Pictures of the Boston Fire Department Are Educating the Paris Fire Brigade

As a means of teaching the members of the Paris fire brigade the most up-to-date methods of fire fighting, Major Paul Vanginot, chief of the fire brigade of the leading French city, ordered a set of motion picture films showing the Boston Fire Department at work. These pictures have recently been finished and have been approved by Fire Commissioner Theodore A. Glynn and Fire Chief John O. Tabor. The films show the work of the rescue squad, the hook and ladder teams throwing a 30-foot ladder to a fire-escape and a 65-foot ladder against a tower, the use of scaling ladders, complete engine drills and the making of hose connections, the use of the fire-boat, and other details of fire department work.

Toledo Has a Dance Law with New Provisions

Elimination of noonday dances is a feature of Toledo's new dance hall ordinance. Other innovations are the registering of chaperons for all public dances, and the appointment of a board to determine correct dance steps. The wording of the latter provision follows:

"...; a committee of five (5) to be appointed by the supervisor of dances, composed of two dancing masters, one citizen, the supervisor of dances, and one other person, shall from time to time formulate rules and regulations governing the conduct of patrons of public dances, stating what dances are permitted and what dances are forbidden, together with the correct positions to be assumed by dancers. A copy of which rules and regulations shall be printed in large type, and posted in a conspicuous part of every hall used for public dances."

Radio Imposes New City Obligations

Three hundred radio aerals were ordered torn down in Kansas City by the chief engineer of the municipal light and power plant, says the *City Manager Magazine*. This work was undertaken in an effort to diminish the hazard of electrocution, as light wires carrying sufficient amperage to kill are in every section of the city. Wave interference in Atchison caused by the disturbance of the ether by unlicensed tele-

graphic transmitting sets used by small boys, has caused the City Commission to pass an ordinance prohibiting this practise. The ordinance follows:

An ordinance prohibiting unnecessary electrical disturbance of the atmosphere.

Be it ordained by the Commissioners of the city of Atchison:

Sec. 1. By reason of the educational and instructive information being constantly broadcasted from many parts of the world by radio, same being received at least in part by people in Atchison and vicinity, be it and it is hereby made unlawful for anyone to unnecessarily and electrically disturb the atmosphere within the limits of the city of Atchison by any means whatsoever not necessarily incident to the operation of some device, mechanism, or apparatus used and useful in any business, trade, or occupation.

Sec. 2. Anyone violating the provisions of Section 1 hereof shall be fined not to exceed \$50.00 or sentenced not to exceed fifteen days in the City Jail, or both such fine and imprisonment.

Sec. 3. This ordinance shall be in force and effect immediately upon its passage, approval and publication in the official city paper.

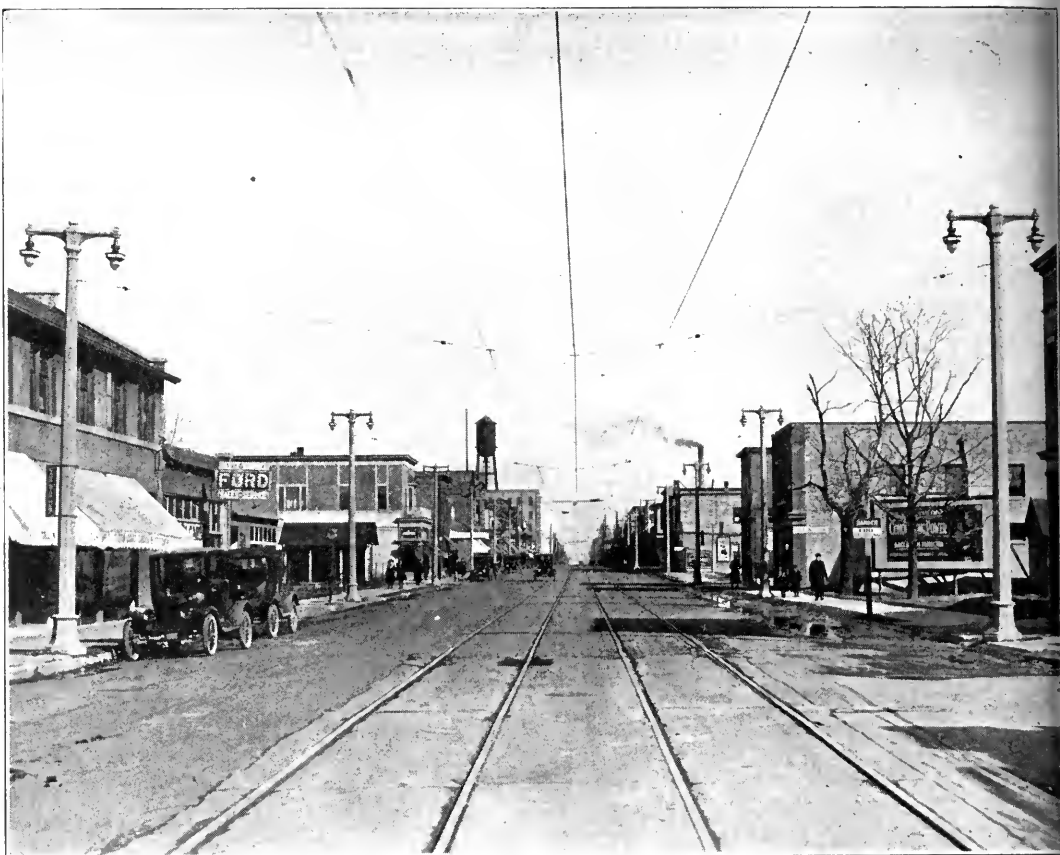
Municipal Borrowings Nearly Equal Corporation Loans

The Wall Street Journal recently called attention to a tabulation showing the annual issuance of bonds by railroad, industrial and public utility corporations and by municipalities for the twelve-year period from 1911 to 1922. These figures showed that the total corporation financing for the twelve-year period was just about double the municipal financing. Included in the municipal totals are all state bonds and bonds of U. S. territorial or insular possessions and municipalities thereof. At the beginning of the period, 1911, municipal loans were \$339,046,000 against \$948,586,000 for corporations. In 1919, 1920, 1921 and 1922, municipals increased rapidly. For the four-year period municipal bond issues amounted to \$4,182,992,433, as against corporation loans of \$5,012,091,000.

In commenting on this tabulation, *The Bond Buyer* says:

"Municipal financing has, of course, grown tremendously. But this could hardly be surprising considering the normal growth in the population of the country and the insistent demands of expanding city populations for modern civic service. Also, the tremendous development of the highway system of the country (financed mainly with public loans) has come about within the last decade.

"The civic development of a community like Detroit, for instance, gives a very good idea of the necessity of the many loans made by that city in recent years."



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A Federal Council of Citizenship Training Has Been Organized

An Executive Order by President Harding dated January 12, 1923, has created the Federal Council of Citizenship Training, to consist of one representative and one alternate from each of twelve Federal offices. The duties of the Council are to make constructive suggestions as to how the Federal offices may cooperate to secure more effective citizenship training, both in their own work and in cooperation with all other public and private agencies throughout the country. The first meeting of the Council was held on January 26. Subsequent meetings are to be held at least once a month. The Council elects its own officers and determines its own procedure. It does not report as a body to any one Federal office, but each member reports its findings and recommendations to his own department head, through usual channels for consideration and action.

Syracuse Has Been Chosen for Health Demonstration

Syracuse has been selected as the up-state industrial city area for one of the three health and tuberculosis demonstrations to be made in New York State with the aid of the Milbank Fund. It is estimated that total expenditures of between \$1,500,000 and \$2,000,000 will be made in five years for these demonstrations. Their purpose is to show that sickness can be prevented by utilizing all the resources of science and of existing public and private agencies which can be brought to bear upon it. The Milbank Fund was created by the late Elizabeth Milbank Anderson in memory of her father and mother, Mr. and Mrs. Jeremiah Milbank. The Technical Board and the Directors of the Fund are in close touch with the experience and good judgment of the Executive Committee of the State Committee on Tuberculosis and Public Health of the State Charities Aid Association. The special advantages of Syracuse for this work are the following: the location there of a medical college connected with a teaching institu-

tion; the high grade of the existing work of the municipal health department, which is developed without the hindrance of political fluctuations; the exceptional degree of unity among the public and private health agencies; the unity within the medical profession; the city's independence of other large centers; and its easy accessibility. The resources of the Milbank Fund will be used to supplement local health expenditures in carrying out the demonstration, and it is expected that the responsibility for continuing each new valuable phase of work established will be assumed locally.

School Savings Banks Have More Than \$6,000,000 in Deposits

In a recent report of the Savings Bank Division of the American Bankers' Association, of New York, entitled "New Record in School Savings Banks," detailed figures are given of the school savings banking systems in 394 American cities for the school year 1921-1922. During this school year the number of operating systems more than doubled, and in the two years from June 30, 1920, to June 30, 1922, the bank balances increased from \$3,891,494.88 to \$6,382,542.75.

The primary purpose of school savings banking systems is to teach the children to practise thrift and to save systematically, and to help them to understand the economic functions of savings banks.

It follows that the successful systems are the ones in which all pupils participate by becoming actual bank depositors—"just like daddy." The number of pupils participating in the school savings systems has constantly increased, as follows:

| | |
|-----------------|-----------|
| 1919-1920 | 462,651 |
| 1920-1921 | 802,906 |
| 1921-1922 | 1,271,029 |

The number of schools (buildings) in which the system was operating last year was 4,582 as compared with 3,316 during the preceding year.



A SCHOOL BANK POSTER,
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At Atlantic City---



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Atlantic City's Boardwalk from Michigan Avenue to Kentucky Avenue was turned into an auditorium Saturday, January 27th.

The occasion was an entertainment by the National Exhibitors. Their program including speeches by Atlantic City's Mayor, E. D. Bader, Commissioner of Public Safety, W. Cuthbert and President S. P. Leeds of the Chamber of Commerce, a vocal solo by Maria Samson and a piano recital by Alexander Gunn.

Through the projectors (indicated by circles in the above pictures) of the

Western Electric

Public Address System

mounted on the Brighton and the Traymore and along the Boardwalk every limitation to the carrying power of the human voice and the piano was removed. And as far as those on over 2,000 feet of the Boardwalk were concerned they heard as if they were within fifty feet of the entertainers.

An extension of the System would have made the entertainment clearly audible from end to end of the Boardwalk.

Amplification of entertainments is only one of the services a Western Electric Public Address System renders. It has a place in the quick, accurate distribution of information in the City Police, Fire and Educational Department.

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Conducted by A. L. H. Street, Attorney at Law

Ordinance Excluding Motor Busses from Congested District Upheld

An ordinance was adopted by the city of Providence, R. I., forbidding the operation of motor busses within a specified area in the center of the retail section of the city. In the case of *Fritz vs. Presbrey*, 116 Atlantic Reporter, 419, the validity of this ordinance was unsuccessfully assailed before the Rhode Island Supreme Court. In part, that tribunal observes:

"The regulation of vehicular traffic in the crowded streets of the city of Providence for the purpose of promoting the safety and convenience of the people using those streets, presents a proper subject for the exercise of the police power. Whether the policy of the City Council, embodied in the ordinance, presents the best scheme of regulation, is not a judicial question. The complainants should not be granted an injunction, permanent or temporary, until they have established unmistakably that the ordinance in question is an arbitrary exercise of power, or that its provisions have no reasonable relation to the promotion of the safety and convenience of the public, as a whole, in its use of the highways within said prescribed area. This the complainants have failed to do. They do not question that the traffic congestion in the streets and public places included in said area is the greatest in the city; that the City Council has endeavored to relieve this congestion by restricting the length of time that vehicles may stand in said streets and public places, by entirely prohibiting such standing in some locations, by stationing traffic policemen in various places in such area to direct the movement of traffic, and by providing that in some of said streets traffic shall proceed in one direction only. The complainants have not attempted to deny that the removal of the business of operating motor busses from this area will tend to promote the safe and convenient use of the highways therein by the community generally. . .

"The only other matter presented to said justice was the testimony of several holders of motor-bus licenses to the effect that since the change in termini there has been a decrease in the number of their passengers and a consequent falling off in their receipts from fares. This, however, in the circumstances furnishes no ground for relief. As we have seen above, the ordinance was an exercise of delegated police power directed toward an object well within the scope of that power, and having a reason-

able relation thereto. Although it may have resulted in pecuniary loss to the licensees, that does not render the ordinance invalid, unless it is plainly shown that it was adopted in arbitrary and oppressive disregard of their rights. There was nothing produced at the hearing which would warrant such a finding. These licensees are subject to the ordinary rule that the individual is without relief if he finds his business injuriously affected by a proper exercise of police power. In this case, though such licensees may regret the result, they have no ground for complaint, for they accepted licenses which contained the express provision that they were subject at any time to a legal provision prescribing, limiting, altering, or abolishing any route or routes to be traveled by motor busses."

Ordinance Forbidding Holding of Public Meetings in Streets Unless Permission Is Granted—Upheld

The decision of the New York Court of Appeals in the case of *People vs. Atwell*, 133 Northeastern Reporter, 364, affirms the holding of the Appellate Division of the Supreme Court of the state that the city of Mt. Vernon's ordinance forbidding the holding of public meetings in the streets without permission from the mayor is valid. In discussing the power of the state and municipal legislatures to limit the use of streets, the Court of Appeals observes:

"The Legislature had the constitutional right to confer upon the Common Council of the city of Mt. Vernon the power to enact ordinances regulating the use of public streets and the gathering or assembling of persons thereon. This power was expressly given. The ordinance passed clearly came within the provisions of the charter and had the force and effect, within the corporate limits of the city, of a statute passed by the Legislature itself. . . . The ordinance passed in pursuance of the power thus conferred is valid, since it is a reasonable exercise of the police power over the public streets.

"It is quite beside the question to assert that the acts forbidden may be lawful in themselves, and could not in a general way be prohibited. On the streets the exercise of such rights is subordinate to the public right of travel and may be regulated or prohibited. Public meetings and assemblages held on the streets tend to obstruct the streets and destroy in a measure the very purpose for which they have been dedicated."

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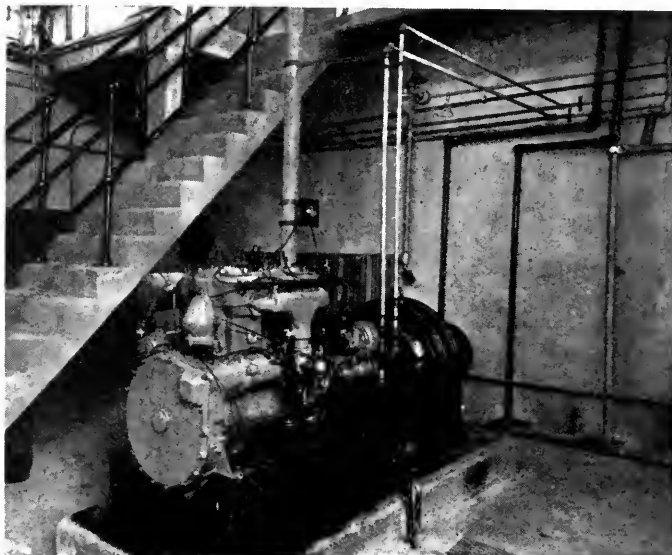


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Ordinance Excluding Taxicab Stands from Congested District Upheld

The city of New Orleans adopted an ordinance reciting that in order to relieve congestion in streets in the central business district no person should use such streets as a stand for any vehicle operated for hire, etc., within certain down-town limits. This ordinance was attacked in the case of *City of New Orleans vs. Calamari*, 91 Southern Reporter, 172, on the ground that it involves an unconstitutional discrimination against taxicabs and other vehicles devoted to public service. The Louisiana Supreme Court, however, finds that the ordinance is a legitimate exercise of municipal police power. In the course of an extended opinion that Court says:

"The streets of the towns and cities in the state of Louisiana being among the things that are 'public' and 'for the common use,' no individual can have a property right in such use for the purposes of his private business, unless, speaking generally, that business being in the nature of a public service or convenience, such as would authorize the grant, the right has been granted by the state, which alone has the power or right to authorize it, or by the particular city or town, acting under the authority of the state, and, in such cases the right can be exercised only in accordance with the conditions of the grant; that is to say, an individual seeking, but not possessing, a right of that kind, may accept the grant, with the conditions imposed by the offer, in which case he becomes bound by the conditions, or he may refuse to accept the conditions, in which case there is no grant, and without the grant so offered, or some other, from the authority competent to make it, he can never acquire the right to make use of a street as his place of business."

Court Holds That a City May Not Administer Charitable Work Through the Salvation Army

The clause in the Georgia constitution forbidding use of public funds in aid of any church, sectarian institution, etc., is held by the Supreme Court of the state to prevent a city from contracting to reimburse the Salvation Army for expenses incurred in performing local charitable work. (*Bennett vs. City of La Grange*, 112 Southeastern Reporter, 482.) The Court reaches this conclusion after considering the manifest purpose of the constitution and the objects of the Salvation Army:

"So, when the city of La Grange made the contract with the Salvation Army, by which the latter, a sectarian institution, assumed the care of the poor of that city, although at actual cost, this was giving a great advantage and the most

substantial aid to the Salvation Army in the prosecution of its benevolent and religious purposes. The giving of loaves and fishes is a powerful instrumentality in the successful prosecution of the work of a sectarian institution. So we are of the opinion that the taking of money from the public treasury of the city of La Grange, in payment to the Salvation Army for its care of the poor of that city, amounts to the taking of money from its treasury, directly and indirectly, in aid of this sectarian institution, in violation of this provision of the constitution of Georgia.

"So we are of the opinion that the Court erred in refusing to grant an injunction restraining the execution of the contract between the city and the Salvation Army, and the judgment of the lower court is therefore reversed."

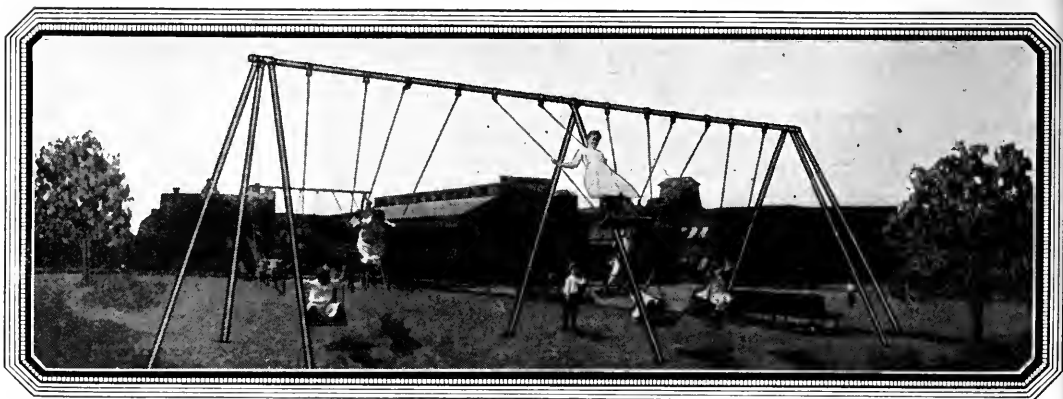
Lighting Company Held Liable for Shade Trees Killed by Escaping Gas

In the case of *City of Salem vs. Salem Gas Light Company*, 135 Northeastern Reporter, 573, the Massachusetts Supreme Judicial Court affirmed judgment in favor of plaintiff on account of destruction of shade trees in a street in front of the city's free public library, resulting from negligence of defendant gas company in permitting its mains to become and remain in a leaky condition.

Municipal Official's Agreement to Accept Less Than Fixed Salary Is Void as Against Public Policy—Agreements with Council Must Appear of Record

"It is a general rule that an agreement by an officer to accept less than the fixed salary of an office to which he is elected or appointed for his compensation is void, as against public policy. . . . It would therefore appear that, if it be conceded that Woodward actually agreed, as contended by the city, to serve as marshal for \$25 per month when the salary was fixed by ordinance at \$50, he was not bound thereby, the agreement being against public policy, and void.

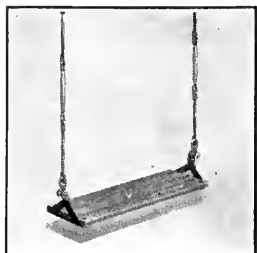
"Moreover, there was no competent evidence offered by the city to prove such an agreement. A city can only speak through its records, and there was no record of the city reciting or entering such an agreement. Oral testimony of an official as to what action the city council has taken on a given subject is inadmissible. The records alone are competent evidence of such facts." (*Kentucky Court of Appeals, Town of Nortonville vs. Woodward*, 231 Southwestern Reporter, 224.)



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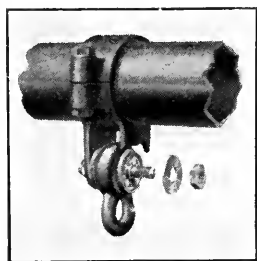
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Municipal and Civic Publications

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Vital Statistics.—By George Chandler Whipple, Professor of Sanitary Engineering in Harvard University; member of Public Health Council, Massachusetts State Department of Public Health. Second edition. John Wiley & Sons, Inc., New York. 1923. XIV + 579 pp. Diagrams and tables. \$4.00.

An introduction to the science of demography. A book for students who are preparing themselves to be public health officials and "for public officials who are willing to be students." It shows how to express vital facts by figures, how to tabulate them and how to display them by diagrams; how to compute birth-rates and death-rates; how to analyze, adjust and standardize death-rates, and how to make life tables. The revision of the book has been made chiefly in accordance with the 1920 census data. A new chapter on the estimation of future population of cities has been prepared as a result of the present interest in the subject.

Rural School Survey of New York State.—By the Joint Committee on Rural Schools, George A. Works, Chairman. Published by the Rural School Department of the New York State College of Agriculture, Cornell University, Ithaca, N. Y. 1922. 272 pp. Views, diagrams, tables. 75 cents, postpaid.

Based on reports and recommendations made to the Joint Committee by its survey staff, with the idea of being of the most assistance to the people of the state in arriving at decisions on the important problems affecting the rural schools. The committee considers that the most fundamental questions involved are: optional consolidation of schools; a better-prepared teaching personnel; equitable distribution of the burden of school support; a larger unit of local administration.

The Significance of the Fine Arts.—Marshall Jones Company, Boston. 1923. XXIV + 483 pp. \$3.50.

Ten essays on the Arts, as follows: The Appreciation of Art, by George C. Nimmmons; Classical Architecture, by C. Howard Walker; The Architecture of the Middle Ages, by Ralph Adams Cram; The Renaissance, by H. Van Buren Magonigle; Modern Architecture, by Paul P. Cret; Sculpture, by Lorado Taft; Painting, by Bryson Burroughs; Landscape Design, by F. L. Olmsted; City Planning, by Edward H. Bennett; The Industrial Arts, by Huger Elliott; Music, by Thomas Whitney Surette; Significance of Art, by C. Howard Walker.

Frederick Law Olmsted, Landscape Architect, 1822-1922.—Edited by Frederick Law Olmsted, Jr., and Theodora Kimball. G. P. Putnam's Sons, New York. 1922. XV + 131 pp. Illustrated. \$2.50.

This first collection of Mr. Olmsted's writings was issued in the centennial year of his birth, and paints the background of his professional career. Biographical Notes give in diary form the outline of the events of Mr. Olmsted's education and work, making a framework on which to place the delightful "Early Experiences." These have been skillfully grouped and edited to show how he was led into the profession of landscape architecture, and yet to retain the charm of an intimate narrative. The last section of the book reveals the then uncultivated field which Mr. Olmsted's gifts and knowledge fitted him to develop.

Impressions of European Forestry.—By Ralph S. Hosmer, M. E., Professor of Forestry, Cornell University. 1922. 80 pp. Illustrated. Address orders to Professor Ralph S. Hosmer, 209 Wait Avenue, Ithaca, N. Y. \$1.00 postpaid.

A series of letters originally published in the "Lumber World Review" of Chicago. Written during a seven months' journey in Europe, and setting forth in a non-technical way the observations of an American forester in Great Britain, Sweden, Norway, Denmark, Germany and France. A book for the student of forestry, and one which shows the general reader how the experience of Europe can profitably be applied to the solution of American forest problems.

Education in Albany—An Opportunity and a Business.—56 pp. Many illustrations. It is possible for a child to spend seventeen years in the regular public school courses of Albany, N. Y. (Apply to the Education Committee of the Albany Chamber of Commerce.)

Rate-Making for Public Utilities.—By Lamar Lyndon. McGraw-Hill Book Company, New York. 1923. VII + 209 pp. \$2.00.

Covering rate-making for gas supply, electrical supply, electric railways, and telephone service, preceded by the following chapters: The General Theory of Rate-Making; Depreciation; Methods of Valuation—Reproduction; Valuation by the Historical Cost Method; Intangible Values; Modifications of Capital Account; The Rate of Return; Operating Costs; Increase in Population of Cities. Designed to be non-partisan and to set forth statements and conclusions directed to the insurance of justice towards both parties—the public and the utility, and to prevent either from imposing on the other.

Public Welfare in the United States.—The January, 1923, issue of "The Annals," published by The American Academy of Political and Social Science, 39th Street and Woodland Avenue, Philadelphia, Pa. VI + 282 pp. \$1.00.

Containing groups of articles by authorities under the following general divisions of the subject of Public Welfare: General Scope; History and Principles Involved; The Contributions of Voluntary Agencies to Public Welfare; State Systems of Public Welfare; Municipal Problems and Systems; Professional Training and Vocational Work—46 valuable articles, besides the Book Department.

Everyday Citizenship.—By Frederick F. Blachly, Professor of Government and Director of the Bureau of Municipal Research, University of Oklahoma; and Miriam E. Oatman. Charles E. Merrill Company, New York. 1922. VII + 252 pp. Illustrated. 80 cents, postpaid.

A text-book for schools, beginning with a division which considers the nature, functions and divisions of government, and proceeding from a study of local government to that of the state and the national governments.

Street Paving and Maintenance in European Cities.—By Henry Welles Durham, formerly Chief Engineer, Bureau of Highways, New York City. 437 pp. Many illustrations. Copies of this well-known report are available to any library, institution or individual upon application to the Municipal Reference Library, Municipal Building, New York, N. Y.

Mr. Durham was appointed by Mayor Gaynor of New York City as a delegate to represent the city of New York at the Third International Road Congress held in London on June 23, 1913. At the same time he was commissioned to make a study of paving and street maintenance in the principal cities of Great Britain and Central Europe. A large part of the volume is made up of photographs showing the appearance of all classes of streets in the cities visited, specifications for various kinds of paving, and comments on matters relating to the bettering of street conditions.

Fairmount Park Art Association.—Published by the Association, 320 South Broad Street, Philadelphia. 1922. 279 pp. Many illustrations.

An account of the origin and activities of the Association from its foundation in 1871, issued on the occasion of its fiftieth anniversary, 1921. The views of works of art and the portraits of founders of the Association and the first trustees, and of famous sculptors, with their biographies, are also of great interest. In America there is no other organization of this type that has had so long a history. It has had a powerful influence on the building of the Fairmount Parkway and on the construction of the Art Museum. The book contains the address of Honorable James M. Beck on "The Utility of Civic Beauty," given at the celebration of the fiftieth anniversary. The history of the Association, herewith presented, was prepared by the President, Charles J. Cohen.

Child Welfare—A Selected Bibliography.—Including material issued only since 1918. 4 pp. Bulletin of the Russell Sage Foundation Library, Number 56, December, 1922. Price 10 cents. (Apply to the Library, 130 East 22nd Street, New York, N. Y.)

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Eighth Annual Conference on Highway Engineering.—Proceedings of this Conference, held at the University of Michigan, February 13-17, 1922, under the direction of the College of Engineering, with the cooperation of the Michigan State Highway Department. 268 pp. Views, diagrams, tables. University Bulletin, New Series, Vol. XXIV, No. 19, November 4, 1922. Information for road commissioners and highway engineers on the organization and administration of highway departments, and on all phases of the financing, construction and maintenance of highways and bridges. (Apply to the University of Michigan, Ann Arbor, Mich.)

Plan of Saint Paul.—By Edward H. Bennett and Wm. E. Parsons, consultant city planners, and George H. Herrold, city plan engineer. Submitted to the citizens of Saint Paul by the City Planning Board. Published by the Commissioner of Public Works. 1922. Quarto. Many views, maps and diagrams. An elaborate presentation covering the history of city planning in this city, and the work of the two and one-half years immediately preceding the publication of the report, in all phases, including traffic problems and zoning. (Apply to Wm. J. Peter, Commissioner of Public Works.)

Constantinople To-Day. The Macmillan Company, New York. 1922. XI + 418 pp. Maps, charts, views. \$5.00.

"The Pathfinder Survey of Constantinople."—A study in Oriental social life, under the direction of Clarence Richard Johnson, Professor of Sociology, Robert College, Constantinople. With a foreword by Dr. Caleb F. Gates, President of Robert College. Eight organizations in betterment work in Turkey cooperated in this survey, which covers the historical setting, civic administration, community organization, industrial life, refugees, orphanages, recreation, widowhood, adult delinquency, and the native schools.

Guide to the Municipal Government, City of New York.—Compiled by Major Joseph Caccavajo, C. E., consulting engineer and expert on population and statistics of the city of New York. 140 pp. Setting forth the organization, duties and facilities of the various city departments, under the heads of Local Legislation; Education and Recreation; Protection of Life and Property; Health, Sanitation and Care of Dependents; Correction; Facilitating Commerce and Traffic; Courts; Central Purchasing and Printing; Miscellaneous Activities; and County Government. Published by the "Brooklyn Daily Eagle." 1922. Price 50 cents. (Apply to publishers, Eagle Building, Brooklyn, N. Y.)

Social Service Resources of Cincinnati and Hamilton County, Ohio.—A handbook issued by The Helen S. Trounstine Foundation for social research. 1922. Compiled and prepared by H. Dora Stecker and Eugenia L. Reinell. Containing information on some 264 organizations "which have as their common purpose human helpfulness." 105 pp. Price 35 cents. (Apply to publishers, 25 East Ninth Street, Cincinnati, Ohio.)

Public School Finance in Minnesota.—Summary of a report prepared for the Minnesota Education Association Committee on School Tax and Sources of School Support. By Fletcher Harper Swift, Professor of Education in the University of Minnesota, and Frances Kelley del Plaine. October, 1922. 59 pp. Tables and diagrams. "If the money which Minnesota is now spending [for schools] were distributed in a scientific and efficient manner, the deplorable educational extremes now existing would vanish." (Apply to the University of Minnesota, Minneapolis, Minn.)

A State Park Plan for New York, with a Proposal for the New Park Bond Issue.—December, 1922. Published by the Committee on State Park Plan, of the New York State Association. 83 pp. Maps, views, and drawings. Reporting upon each of the main features of the plan in support of the bond issue bill, to indicate the scope and character of the developments regarded as desirable by those most familiar with the local problems. (Apply to Robert Moses, Secretary of the Committee, 305 Broadway, New York, N. Y.)

Water Power Survey of Surry and Wilkes Counties.—By Thorndike Saville, hydraulic engineer. Economic Paper No. 53, published by the North Carolina Geological and Economic Survey, Chapel Hill, N. C. The first of a series of reports that are being made on the water-powers of the several counties of the state in cooperation with the boards of county commissioners. 1922. 41 pp., with maps, profiles and tables. (Apply to the publishers.)

Zoning Progress in the United States.—State laws and municipal ordinances, January, 1923. Zoning ordinances have been adopted by 109 municipalities throughout the country. On January 1, 1922, the record showed only 55. 8 mimeographed pp., issued by the Division of Building and Housing, Department of Commerce, Washington, D. C., to which apply.

Hydro-Electric System, Winnipeg, Man.—Manager's annual report for fiscal year ending December 31, 1921. 12 pp. Illustrated. (Apply to J. G. Glascoe, Manager.)

Bureau of Highways, Philadelphia, Pa.—Annual report for the year ending December 31, 1921. 98 pp. Illustrated. (Apply to Fred G. Dunlap, Chief of Bureau.)

The Corrosion of the Lead Sheaths of Cables by Water Seeping Through Concrete.—By George C. Bunker, in charge of water purification and the Testing Laboratories of the Municipal Engineering Division, Ancon, Canal Zone; and A. H. Khachadorian, Chief Chemist of the Testing Laboratories of the Municipal Engineering Division, Pedro Miguel, Canal Zone. Reprinted from "The Journal of The Worcester Polytechnic Institute," November, 1922. 11 pp. Illustrated. (Apply to George C. Bunker, Box 262, Ancon, Canal Zone.)

Recommended Minimum Requirements for Small Dwelling Construction.—Report of the Building Code Committee of the Department of Commerce, Washington, D. C. July 20, 1922. VI + 108 pp. Drawings and tables. In three parts: I, covering the circumstances which led to the formation of the representative committee, and its method of procedure and scope of operation; II, stating the minimum requirements in the form of an ordinance suitable for municipal adoption; III, containing material not suitable to being incorporated in a building law, but explanatory of various requirements made in Part II. Price 15 cents. (Apply to the Superintendent of Documents, Government Printing Office, Washington, D. C.)

Uniform Classification of Accounts for Gas, Electrical and Water Utilities.—Three pamphlets prepared by the Committee on Statistics and Accounts of Public Utilities and recommended for adoption by state commissions at the annual meeting of the National Association of Railway and Utilities Commissioners, held in Detroit, Mich., November, 1922. 100 pp. Published by the State Law Reporting Company, 233 Broadway, New York, N. Y. (Apply to publishers.)

Connecticut State Parks and Forests.—A report of the State Park and Forest Commission to the Governor, for the fiscal term ended June 30, 1922. State of Connecticut Public Document No. 60. 1922. 68 pp. besides plates and map. (Apply to George A. Parker, Secretary, Connecticut State Park and Forest Commissioners, Hartford, Conn.)

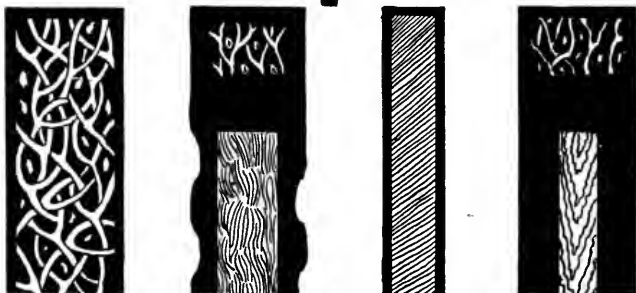
The Port of Milwaukee—Historical—Descriptive—Prospective.—A quarto report of 32 pp., with many views and a large drawing of the Milwaukee Harbor Project. Showing the work already accomplished, the present conditions and the great need for lake port development. Published by the Board of Harbor Commissioners, Milwaukee, Wis., December, 1922. (Apply to publishers.)

The Clarkburg Town Crier.—Official publication of the city of Clarkburg, W. Va. Vol. I, No. 1, January, 1923. 8 quarto pp. Its purpose is to report regularly the activities of the city government, to discuss problems of general interest, to give the reasons for important decisions made by the City Council, and to increase interest in city government by reporting progressive ideas from other cities. No charge to citizens. Costs covered by receipts from advertising. (Apply to Harrison G. Otis, City Manager, Clarkburg, W. Va.)

Physical Status of Preschool Children, Gary, Ind.—By Anna E. Rude, M. D., director of the child hygiene division of the Children's Bureau. Children's Bureau Publication No. 111. 1922. 84 pp. Views, diagrams, tables. Based on an investigation planned by Dr. Grace Meigs Crowder, former director of the division. In all, 4,348 individual examinations of children under 7 years of age were made during the six-month period from April to October, 1918. (Apply to the Government Printing Office, Washington, D. C.)

Proposed Park Areas in the State of Illinois.—A report with recommendations. Published by The Friends of Our Native Landscape, Chicago, Ill. A most attractive set of surveys of certain sections of Illinois that should be preserved for present and future generations. 120 pp. Many diagrams and fine photographs. (Apply to the publishers.)

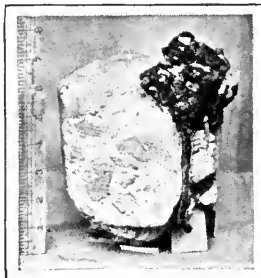
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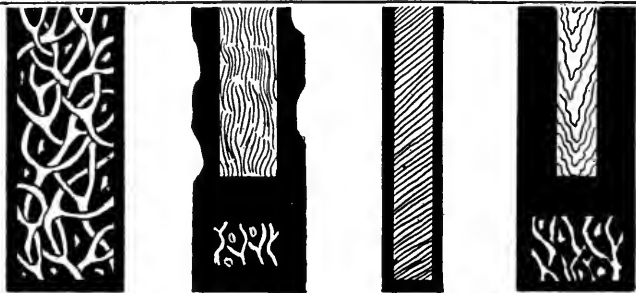
Trapped Under Compression:
The print to the right is an example of oozing under compression. Due to the hard asphalt surfacing over the concrete base, the traffic could not carry the surplus away because it was locked in between the asphalt surfacing and base. The force was great enough, however, to form bulges in the hard asphalt surface.



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Sewage Ejectors at Crystal Lake, Illinois

By D. W. Burgoon

THE city of Crystal Lake, Ill., of 1,500 population, has solved its sewerage problems in an economical and satisfactory manner. The land in and around Crystal Lake is very rolling, and since the city is a combination of two smaller villages, it covers a greater area than a city of its size would normally cover. It has been impractical to consider the gravity sewerage system because of the excessive cuts. By the installation of ejectors one section has been well taken care of, and the remainder flows by gravity. The installation of the ejector saves the city an estimated amount of \$35,000.

According to the President of the Wells Engineering Company, who handled the installation, "The system is safeguarded against any unusual breakdowns of the equipment by the construction of an overflow chamber immediately adjoining the ejector pit and connected with the main sewer line to the ejector by means of a "T" connection. The chamber has a storage capacity of two days' maximum sewage from the territory which it serves."

After due consideration, it was decided to install the Shope system made by Yeomans

Brothers Company, 1417 Dayton Street, Chicago, Ill., the application of this system being such that the territory could be divided into as many drainage areas as desirable, the extent and boundaries of each being determined by the contour of the ground, density of population and other factors. These areas having been established, the point was selected in each at which all sewers of the district were made to converge.

In addition to the saving of \$35,000 mentioned above, there are other advantages in this arrangement, such as self-cleaning velocities from house to outfall, sewage conveyed to the ejectors as rapidly as it is produced and before decomposition sets in, good grades obtained, and large sewers not necessary, as there are no connections between the districts. It is impossible for the sewer to carry contagion from one district to another, and the amount of water required for flushing is reduced to a minimum by reason of the small diameter of the sewer and the comparatively short length tributary to each ejector station. The system is well adapted to the requirements of growing places, as illustrated in this particular installation.

Snow Removal in Boston

Twenty-eight inches of snow fell in the first 26 days of January in Boston, Mass. Rain, with a slight thaw and then freezing weather made the conditions for snow handling most difficult. The major part of the time it was necessary to use a pick for such snow as was removed by hand labor. The transportation division of the Boston Elevated Railway, owners of the surface lines in Boston, used a snow loader made by the Barber-Greene Company, Aurora, Ill., to handle the snow along the streets which the company is required to clean.

James Smith, superintendent of transportation of the Boston Elevated Railway



LOADING SNOW BY MACHINE IN BOSTON, MASS.

THE AMERICAN CITY

LIVING TREES *for* MEMORIALS



AVENUE OF RED OAK

“Roads of Remembrance”

are now features of many cities. Cleveland has planted a tree for each man from that city who lost his life in the war. Hartford, Minneapolis, Ogden and many other cities have made similar plantings.

There is no more fitting memorial than a noble tree which will not only be a monument to those who have passed away but will also give shade and comfort to the citizen and traveler, and help preserve the roadway.

Care, however, must be taken in the selection of the proper tree for this purpose. Varieties that flourish in one section will not always prove satisfactory in another. The Pin Oak, Red Oak and Sugar Maple will flourish almost anywhere.

We will be glad to offer assistance in the proper selection of trees for this or any other purpose.

Thomas B. Meehan Co.

Wholesale Nurseries

Dresher

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Pennsylvania

Company, stated that this machine met all the conditions and handled dry snow, slush and frozen snow with perfect satisfaction. It worked from Wednesday morning continually to 1 a.m. on Monday without any inspection whatsoever. It was then taken off, overhauled, and put into operation again at 7 the same morning. As the result of the work this machine accomplished, a second has been ordered.

These machines were sold by Charles F. Lamprey, Salem, Mass., local representative of the Barber-Greene Company.

Swimming Pool for New High School

The new high school in Bristol, Conn., which is a handsome structure facing the proposed athletic and sport field, is equipped with a modern swimming pool. The Norwood filtration equipment, made by the Norwood Engineering Company, Florence, Mass., consists of three 36-inch-diameter steel pressure filters arranged in battery, together with a recirculating pump and motor and a chemical feeder, with a recirculating capacity of 85 gallons per minute, or 5,100 gallons per hour, making it possible to recirculate the entire contents of the swimming pool in ten hours.

The pump picks up the water from the deep end of the pool, and forces it through a hot water heater, which is governed by a thermostatic regulator, maintaining the temperature at the desired degree. The water then passes through the three filter units and is discharged back into the pool. The water is treated with alum before going to the filter for the removal of all colored matter. The clear filtered water is treated with hypochlorite of lime to preclude any possibility of disease germs being transmitted through the use of the pool. Each filter unit is washed with filtered water delivered by the other two units, thereby economizing in the use of city water for washing purposes.

Standard Conveyor Purchases Brown-Portable Line

The Standard Conveyor Company, North St. Paul, Minn., has announced that it has acquired by purchase all the rights, titles, and patents pertaining to the Brown-Portable line of sectional piling, elevating, conveying, loading and unloading machinery for the handling of packed and loose material. This line of machinery has been manufactured by the Brown Portable Conveying Machinery Company at North Chicago for ten years. Until further notice, the plant will be continued in operation, and all inquiries and correspondence regarding Brown-Portable products should be addressed to the Standard Conveyor Company, Brown Portable Products Plant, North Chicago, Ill.

The organization which has developed the Brown portable conveying machinery will continue with the Standard Conveyor Company in this line.

Maury Consulting Engineer for Norfolk

The name of Dabney H. Maury, 1445 Monadnock Building, Chicago, Ill., who was consulting engineer for the city of Norfolk in connection with the construction of its new filtration plant and the Lake Prince project, was inadvertently omitted from the article, "The New Filtration Plant of the Norfolk Water-Works," which appeared in the January issue of THE AMERICAN CITY.

Good Will Direction Signs for Cities

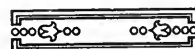
More and more cities each year are taking up the pleasant method of greeting tourists by the use of good will or welcome signs on roads entering the city. One type of sign of this nature made by the Little Giant Company, Mankato, Minn., is made of high-grade semi-steel, which is claimed to last almost indefinitely, with only occasional expense for repainting. The over-all dimensions of the sign



SIGNS THAT GREET THE TRAVELER AND BID HIM GOOD-BYE

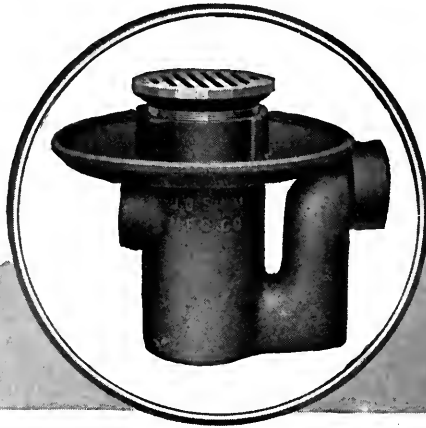


as illustrated are: length, 36 inches; width, 24 inches; thickness, $\frac{3}{4}$ -inch; height, 8 feet. The sign is equipped with 10 feet of heavy 2-inch black iron pipe, the lower end of which is flattened, with a 6-inch bar riveted crosswise for an anchor. The letters are of metal, $\frac{1}{4}$ -inch high, cast integral with the director, and protected by a raised rim of similar height around the entire edge.





The Josam Combined Trap and Drain Eliminates This



700 Series
Drain

The Double Purpose Drain For Drinking Fountains

THE constant use of drinking fountains in public buildings very often results in wet floors around the fountains—the reason being that no drain is provided outside of the fountain to carry the water away. As a result water seeps through the floor and not only damages the flooring but often the ceiling below.

This expensive, troublesome feature is eliminated at once by the use of the Josam Double Drainage Combined Trap and Drain, especially constructed for drinking fountains. It carries away the waste from the fountain and serves as a floor drain at the same time.

This drain is provided with a ball check valve and has a tapped opening on any side required, to receive the waste from the drinking fountain. It serves the same as the ordinary open discharge because the waste from the fountain enters the trap above the water line.

The Josam F Catalog is yours for the asking. Send a post card request today and get the detailed information on the Standard Drains of America.

Branches: New York, Chicago,
Cleveland, St. Louis, Boston,
Albany, Buffalo, Washington,
D. C., San Francisco, Seattle,
Los Angeles.

Canada: Montreal, Toronto

The Josam Manufacturing Co.

Factories: 2nd and Canal Rd.

MICHIGAN CITY, IND.

*"There are no Substitutes
for Josam Drains"*

Josam
TRADE MARK REG.
DRAINS
STANDARD
OF AMERICA

An Up-to-date System of Street Signs

The proper indication of street names at street crossings is a distinct asset to a city. The crisscross street sign shown in the illustration, made by the Municipal Street Sign Company, 206 Broadway, New York City, consists of four high-grade porcelain-enameled sign plates held in reinforced and positively locked malleable iron frames of the highest quality, for any angular intersection of streets. This type of sign is generally used in the residential sec-



A DISTINCTIVE CRISSCROSS SIGN

tions of the city and not only is durable but adds materially to the appearance of the street.

The lighting or trolley pole street sign manufactured by this company is made of an ornamental malleable iron head with malleable iron wings, each wing containing a double-faced porcelain-enameled sign plate which shows the name of the street parallel to it in large letters and the intersecting street in small letters. This sign is furnished complete and ready to attach to electric lighting or trolley poles, and is well adapted for business districts of progressive cities. All of these street signs can be seen from four directions.

New Traffic Control Units

In a new type of traffic control unit offered to municipalities by the Line Materials Company, South Milwaukee, Wis., most of the objections to traffic control units have been overcome. The new unit is known as the Directing Traficon and consists of a heavy steel casting in the form of a hood, extending 8½ inches above the street surface. At the side of the hood, facing the intersecting street, a bull's eye lens is set



THE DIRECTING TRAFICON



THE REGULATING TRAFICON

in a recess perpendicular to the pavement. On either side of the lens, a heavy flange protects it from injury, and its recessed position in the hood is such as to make it almost impossible for it to come in contact with the wheel of a careless driver. The four lenses of this device throw attention-compelling beams of light in all four directions of the intersection. Where arterial highways are in effect, it is possible to insert colored lenses to act as signals, a green lens in the side facing up-and-down arterial highways, and a red lens indicating "Stop" in the sides facing the intersecting streets. A complete color code for traffic can be created and maintained through the interchangeable colored lenses of the unit.

The Regulating Traficon, a companion device to the Directing Traficon, may be defined as a mechanical traffic officer, showing traffic when and where to go. It embodies the same attention-compelling qualities of the Directing Traficon in addition to a "Stop" signal. As shown in the illustration, the Regulating Traficon substitutes a single sign "Stop" for the three usually employed in traffic control devices, namely, "Stop," "Traffic Change," and "Go." The inventor claims that actual use in street service has proved conclusively that the extinguishing of the "Stop" sign is invariably understood as a release of traffic and that traffic does not need to be told to "Go." "Traffic Change" is indicated by a winking of the light above the lens. The device can be set to operate automatically or it can be placed under the control of an officer, with a switch at the curb.

Decker Goes with Lock Joint Pipe Company

David A. Decker, formerly Principal Assistant Engineer, Department of Public Works, Norfolk, Va., has resigned his official connection with the city to become associated with the Lock Joint Pipe Company of Ampere, N. J., as engineer in charge of the construction of the 52-mile line of 60-inch concrete pressure pipe for Tulsa, Oklahoma.



Speed, Accuracy, Economy and Better Lawns

Adopted by leading
Park Superintendents
as Standard Equipment

Performance on a dollars and cents basis is the bid this wonderful power lawn mower makes for the job of keeping your city lawns beautiful. The 4-Acre does the work of four or five men with hand mowers. Cuts four to five acres a day at a fuel cost of less than 40 cents a day.

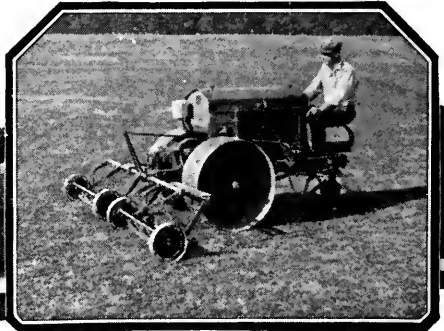
The 4-Acre Power Lawn Mower

is the highest development of lawn mower construction. Works where no other mower will. Has abundant power for hilly ground and tough spots. It is easy to guide, runs anywhere close to trees, shrubs, flower beds, etc. Built with the mechanical accuracy of an Automobile—sturdy as a tractor.

Write for Catalogue "Lawns Beautiful" and learn how to cut your cost of lawn upkeep and make your lawns a source of city pride. Ask for literature on our Power Putting Green Mower for your municipal golf course.

Jacobsen Manufacturing Co.

Dept. E., Racine, Wis., U. S. A.



Trims rapidly and closely around trees, shrubbery and other obstructions. Turns in its own length forward or backward.

THOSE durable "Bulldog" cutting units found on Ideal Power Mowers are made in the Ideal factory especially for power work. Special steels, Timken bearings, and extra heavy construction enable them to give longer, more trouble-free service than any other cutting unit made.

Actual figures, furnished by famous golf clubs, prove conclusively that the Ideal Triplex Mower will cut more grass at less cost—month after month—than any other mower made. Flexible, fast control and the fact that the operator can raise or lower the cutting units without leaving his seat, are responsible for the many new records it has established.

Write to us for details showing why the Ideal Triplex has in many cases replaced all other types of equipment on famous golf courses, estates and parks.

Ideal Power Lawn Mower Co.

400 Kalamazoo St.

R. E. OLDS, Chairman

Lansing, Michigan

New York, 13-19 Hudson St.

Chicago, 11 East Harrison St.

Dealers in all Principal Cities

IDEAL Power Lawn Mowers



PENDANT BUG-PROOF LIGHTING
UNIT FOR LOS ANGELES

New Street Lighting Equipment for Los Angeles, Calif.

When Los Angeles, Calif., recently purchased its street lighting system from the Southern California Edison Company for \$11,000,000, it began to pay particular attention to the plant and its equipment. It is now improving the lighting in the outlying districts and in those business streets which are not included in the ornamental lighting area. These streets will be equipped with pendant units operating 20-ampere series Mazda lamps suspended at street intersections. In order to obtain a maximum light distribution over a large area, Holophane refractors will be used, and a type has been selected which will not only give a maximum intensity between units, but will also adequately illuminate the area adjacent to the pendants.

A contract for the entire equipment, including mast arms and constant current regulators, has been awarded to the Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa. The pendants selected are of the Westinghouse dust-proof type, designed with an upper ventilated compartment containing the auto transformer, and a lower closed compartment containing the lamp. The pendants will be equipped with a bowl refractor of the closed type, which will be seated on a felt gasket, thus completely sealing the lamp chamber and preventing the

accumulation of bugs and dirt in the glassware.

The Westinghouse bowl refractor was designed by Westinghouse engineers in cooperation with the engineers of the Holophane Glass Company, 342 Madison Avenue, New York City. It consists of two pieces of pressed crystal glass, one within the other and clamped together so as to form a single unit. The inside surface of the inner piece and the outside surface of the outer piece are smooth, so that in the assembled unit both inside and outside surfaces are smooth, facilitating cleaning. The outside surface of the inner piece has horizontal prisms extending from the lip of the refractor down the bowl to a position opposite the light center of the lamp, so designed as to bend any upward emitted light downward. The rest of the outside surface of the inner piece has horizontal prisms which spread part of the downward rays. The inside surface of the outside prism has vertical flutes, which, while not materially altering the distribution produced by the inside piece, diffuse the light and greatly reduce the brilliancy from that of the unshielded filament. As a result, the surface brilliancy of the refractor is evenly distributed and the light emitted at angles from 60 to 85 degrees with the vertical is greatly increased.

Changes in Worthington Pump Organization

The following changes have been made in the organization of the Worthington Pump & Machinery Company, 115 Broadway, New York City. E. T. Fishwick, formerly sales manager, has been made Vice-President in charge of sales, to succeed F. H. Jones, Vice-President, who has resigned. J. E. Sague, Vice-President, has resigned and is succeeded by William Goodman, formerly assistant to the Vice-President. James C. Barnaby, formerly plant engineer of the Staten Island Shipbuilding Company, New York, is now in charge of certain engineering work in the Diesel oil engine division of the Worthington Pump & Machinery Corporation.

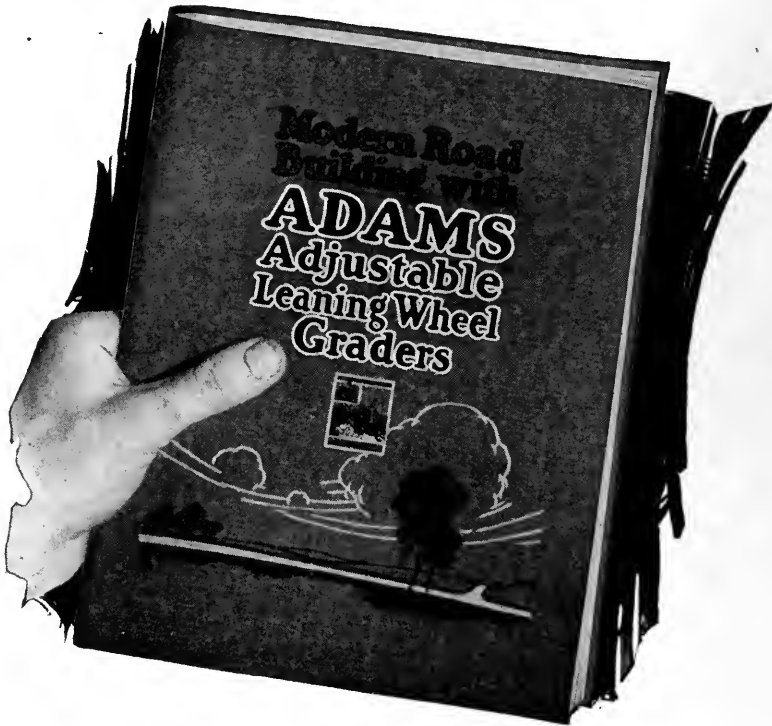
Saving the Seconds That Save Lives

In a recent issue of the *National Magazine* there is a four-page article under the title "Saving the Seconds that Save Lives," by V. C. Stanley, General Manager of the Gamewell Fire Alarm Telegraph Company, Newton Upper Falls, Mass. The article tells in a very interesting manner the real value of the little red box on the corner that is an almost certain safeguard against death by fire. The development of the fire alarm box is described, from the unreliable original Boston box which carried the instructions "Turn the crank six times slowly," through the automatic boxes, to the present non-interfering automatic box of to-day.

New Brick Representative

E. O'Keefe has closed his private engineering practise in Mason City, Iowa, and in the future will represent the Western Paving Brick Manufacturers' Association in Iowa and Minnesota, with offices in Mason City.

==Your Copy is Ready==



Send for It Today

Every Street Commissioner, Highway Official and Road Contractor should get this new Adams Catalog before buying a single piece of grading equipment. It illustrates and describes the most advanced methods of road construction, shows and proves conclusively why Adams Graders do this work better and at less cost than any other machinery, and illustrates the complete line of Adams Graders and Road Machinery. It is full of practical suggestions every road builder will appreciate.

Send for your copy today. Just fill out and mail the coupon below.

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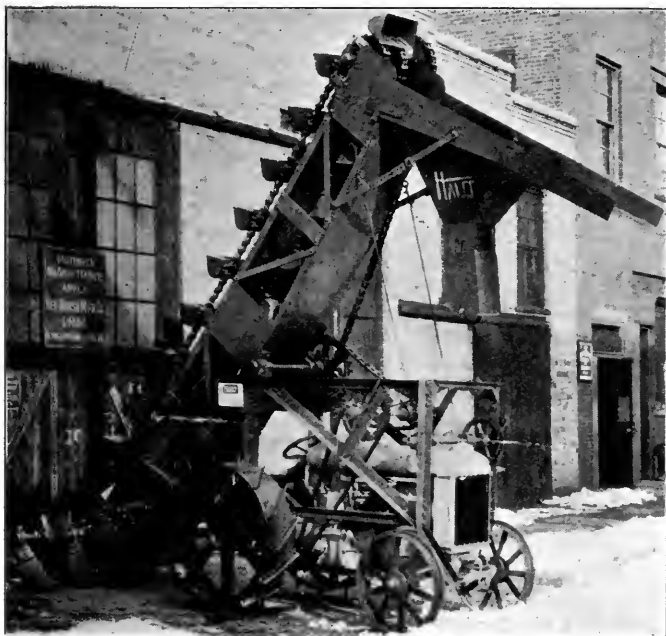
A. C. 3-15

Please send me, without obligation, a copy of your 1923 Catalog.

Name Position

Address

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A HAISS WAGON LOADER MOUNTED ON A FORDSON TRACTOR FURNISHES POWER BOTH FOR MOVING THE LOADER AND FOR OPERATING IT

A Tractor-mounted Truck Loader

One of the latest truck loaders which has been brought out by the George Haiss Manufacturing Company, Inc., 143rd Street and Rider Avenue, New York City, is composed of a standard Haiss truck-loading elevator mounted on a Fordson tractor, equipped with cleats or rubber-tired wheels. The elevator is mounted on the tractor as shown, having a 3-point suspension. The elevator proper is equipped with the Haiss patented feeding propellers and has a capacity of approximately 40 tons an hour. The operator sits on the seat furnished by the tractor, and the control levers are within easy reach. The elevator is driven from a side shaft on which is installed a sprocket connected to a counter-shaft with a Diamond chain. This mechanism is equipped with a clutch so that the machine can be propelled without running the elevator. The speed of the Fordson tractor is approximately 2 miles an hour backward, and there are three speeds forward—2½, 5, and 8 miles per hour. The total weight of the machine is approximately 6,000 pounds.

This is a very suitable unit for cities and counties wishing to load trucks or unload hopper-bottom cars located at various points some distance from one another.

Large-Size Valve-Inserting Machine Being Developed

The great success of the four sizes of valve-inserting machines made by the A. P. Smith Manufacturing Company, East Orange, N. J., for the insertion of 4-inch, 6- and 8-inch, 10-

and 12-inch, 14-, 16-, 18- and 20-inch, and 24-inch valves, respectively, has created a distinct demand for a machine to insert 30-inch valves. The particular success in making the 24-inch valve insertions at Minneapolis, Minn., and Hammond, Ind., has added to this insistent demand, so that the engineers of the A. P. Smith Manufacturing Company are contemplating the design and manufacture of a 30-inch machine for inserting horizontal valves in existing lines without shutting off the pressure. No work has been done on such a machine heretofore, as it has been felt that the cost of experimental work would be great and that its distribution over the few insertions ordered would make the price for the valve inserted almost prohibitive. It is now expected, however, that this year the 30-inch size will be designed and completed.

Wallace & Tiernan Open New York City Office

Appreciating that it is very desirable to be in closer touch with the various firms with which it is doing business, Wallace & Tiernan Company, Inc., Newark, N. J., has opened a district sales office in New York City at 2906 Woolworth Building. This will be in charge of Allan M. E. Johnstone. The opening of this office makes it possible for clients who visit New York from time to time and who find it rather inconvenient to visit Wallace & Tiernan in Belleville, Newark, N. J., to drop in and make use of the service this company is always ready and glad to render in the water sterilization field.

New Pumps for Madison, N. J.

In the improvement of the water-works pumping for the borough of Madison, N. J., recently, two 5-inch, 2-stage horizontal, split-case, bronze-fitted Twinvolute pumps, each rated at 700 gallons per minute against a 300-foot head when operating at 1,750 revolutions per minute, were installed. These pumps, made by the Twinvolute Pump & Manufacturing Company, Inc., 216-228 High Street, Newark, N. J., are direct-connected to 75-horsepower, 3-phase, 60-cycle, 220-volt General Electric motors. The pump efficiency is guaranteed at 76 per cent. The pumps have just been placed in operation, replacing two triple-expansion engines, about four or five times the size of the centrifugal pumps and motors.

Around the world on
native-lake asphalt



TRINIDAD IN THE NATION'S CAPITAL



London
Lille, France ✓
Versailles, France ✓
Frankfurt, Germany ✓
Bombay, India ✓
Johannesburg, S. Africa ✓
Rio de Janeiro, Brazil ✓
San Paulo, Brazil ✓
Washington, D. C. ✓
Mar Del Plata,
Argentine Republic
Mercedes,
Argentine Republic

| STREET | FROM | TO | LAID | MATERIAL | YARDAGE | AGE | Maintenance Average Cost Per Sq. Yd. Per Yr. for 11 Years |
|----------------------------------|------------|-----------|------|----------|---------|------|---|
| 1 | 17th | 18th | 1880 | Trinidad | 2672 | 40 | .0307 |
| 10th | D | E | 1885 | Trinidad | 1982 | 35 | .01393 |
| 4th | Fla. Ave. | T | 1891 | Trinidad | 2145 | 29 | .04448 |
| G | 9th | 10th | 1885 | Trinidad | 1709 | 35 | .0154 |
| 11th | B | Pa. Ave. | 1897 | Trinidad | 3544 | 23 | .0018 |
| F | 22nd | Va. Ave. | 1894 | Trinidad | 660 | 26 | .0235 |
| H | 22nd | 23rd | 1898 | Trinidad | 1232 | 22 | .0057 |
| 15th | U | V | 1895 | Trinidad | 1486 | 25 | .0205 |
| 21st | F | Pa. Ave. | 1899 | Trinidad | 4862 | 21 | .0123 |
| Vt. Ave. | H | I | 1880 | Trinidad | 4156 | 40 | .01414 |
| I | Pa. Ave. | 23rd | 1891 | Trinidad | 6296 | 29 | .0317 |
| R | Conn. Ave. | 21st | 1901 | Trinidad | 1548 | 19 | .01429 |
| 20th | Wyoming | Kalidrama | 1898 | Trinidad | 1238 | 22 | .01797 |
| F | 21st | 22nd | 1899 | Trinidad | 1632 | 21 | .0237 |
| G | 13th | 14th | 1899 | Trinidad | 2057 | 21 | .0116 |
| Average of above fifteen streets | | | | | | 27.2 | .01878 |

Compiled from Records on File in the Office of the Street Department, District of Columbia.

73 per cent of all asphalt paving in Washington, D. C.—a total of 4,164,398 square yards—is native lake asphalt. Sun-cured and weather-beaten for centuries, Trinidad (Native-Lake) Asphalt is the longest-lasting, lowest-cost bituminous paving material known. Write at once for complete information regarding this wonderful material.



The Genasco Line includes asphaltic roofing, flooring, paints and allied protective products. Write for descriptive matter.

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TRINIDAD LAKE ASPHALT



A PRE-FORMED ASPHALT AND FELT TONGUE-AND-GROOVE EXPANSION JOINT SUPPORTED BY DOWELS

A Tongue-and-Groove Expansion Joint for Concrete Roads

A tongue-and-groove expansion joint has been developed by the Philip Carey Company, 8 Wayne Avenue, Lockland, Cincinnati, Ohio, to fill the need expressed to this company by numerous road engineers for a longitudinal joint for concrete roads that would prevent the spalling and crushing of concrete at the joint, due to slab movements. Further, the joint, as illustrated, is formed to maintain at all times a water-tight seal, in spite of a possible movement of adjacent slabs. The tongue-and-groove shape gives an interlocking action which holds adjacent slabs to the same surface alignment, thus making it impossible for one slab to be forced up above or to settle beneath its neighbor.

This Elastite tongue-and-groove expansion joint has been brought out as a direct result of rather extensive experimental installations of the joint made in the summer of 1922 with the assistance of the Illinois State Highway Department. The experimental section is located between Dwight and Gardner, Ill., on the Bloomington-Joliet Road, and is subjected to the heavy traffic between Chicago and St. Louis. The joint has great rigidity and stiffness, even when supported only at its two ends and carrying the $\frac{3}{8}$ -inch diameter by 15-inch steel pins which are passed through the joint and driven into the subgrade to support the joint material in position.

An Improved Lawn-Mower Handle

A number of interesting new features are embodied in the Staytite handle recently patented by the Pennsylvania Lawn-Mower Works, 1615-35 North 23rd Street, Philadelphia, Pa., for use in connection with its line of hand lawn-mowers. The handle is made of second-growth ash, held together by two pressed steel clamps, adjustable to provide against any shrinkage. The handle is said to be unusually strong, but if from some

unusual cause the cross-bars should be broken, repairs may be made easily, obviating the necessity of buying a new handle. It will be noticed from the accompanying illustration that the cross-bar has a slight inward curve, a feature that is claimed to make it more easily grasped and less fatiguing to use.

Transportation Engineer

J. Rowland Bibbins has recently resigned as Manager of the Transportation Department, United States Chamber of Commerce, to engage in consulting engineering practise in transportation and its related economic and civic problems, including district and traffic surveys, railway terminal and transit development, rapid transit service, routing and improvements, valuation and franchise arbitration, and transportation aspects of city planning. Mr. Bibbins' present address is Mills Building, Washington, D. C.

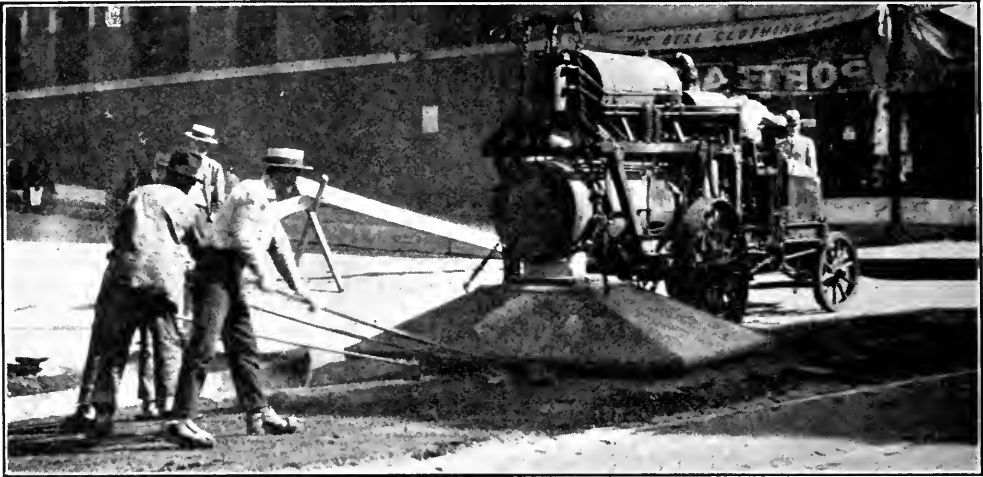
New Illuminating Sales Engineer for Westinghouse

The Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has announced the appointment of G. B. McNair, as District Illuminating Sales Engineer for the Denver territory. Mr. McNair will devote most of his time to street lighting, and his services will be available to any municipality interested in this improvement.



A LAWN-MOWER HANDLE THAT DOES NOT WORK LOOSE

MAKE BETTER ASPHALT STREET REPAIRS



The Improved Lutz Surface Heater Softens 1500 Square Yards a Day

Proper bonding of old and new asphalt is made possible by this fool proof machine which requires hot water to operate. The heating hood slides on the ground saving time and heat. The machine heats 45 square feet of pavement in 1 to 2 minutes and moves quickly ahead. Send for our new prices and specifications.

THE EQUITABLE ASPHALT MAINTENANCE COMPANY
1901 Campbell Street Kansas City, Mo.

The Big Question---City Foresters

Where Can You Get the Best Spraying Equipment for the Smallest Investment?



POWER SHADE THREE SPRAYING

BEAN SPRAYERS

The number of cities placing orders for our equipment after a careful investigation and tryout is the most convincing evidence we can offer as to what our machines will do.

The service is practically perfect; the economy is the lowest; efficiency and long life built into every machine.

Send for our catalog 38-A Today.

101 Hosmer St.
Lansing, Mich.

BEAN SPRAY PUMP CO.

101 Julian St.
San Jose, Calif.



**A POURING KETTLE MADE TO MINIMIZE
DRIPPING AND LEAKS**

Filling Uneven Joints or Cracks

The new "Tarco" joint filler, made by the Tarrant Manufacturing Company, Saratoga Springs, N. Y., is built for filling straight, uneven or crooked joints as desired, with hot asphalt, tar or other heated material, by the use of a nozzle located on the bottom of the pot, graduated to three sizes. At the lowest point or bottom of the pot is a ground joint valve which controls the flow. This valve is so close to the end of the nozzle that the drip or waste is negligible.

The tube composing the handle also contains the rod which seats the ground joint valve at the bottom or outlet. The spring for operating this valve is built into the handle outside of the pot proper, therefore it is not affected by the heat in any way. All parts of this container are replaceable, and the entire pot is welded and can be burned out at any time desired.

The pot is furnished with a strainer if desired, so that all material going into the pot must pass through the strainer. The bail is thoroughly fastened to the body of the pot and arranged with a boss for easy handling. This pot is novel and has been designed to meet a long-felt demand for an article of this character for the use of municipalities and contractors and tile workers to take care of checks in concrete and asphalt roads, the filling of brick paving joints, expansion joints or tile work, and to do any filling that may be necessary where heated material is to be used.

Increased Use of Street Brooms

The 1922 sales of street brooms made by the Osborn Manufacturing Company, 5401 Hamilton Avenue, Cleveland, Ohio, are reported as being 77 per cent greater than those of 1921. This company has made a change in its policy and is placing resident salesmen in Boston, Philadelphia, Columbus, Kansas City, Indianapolis, St. Louis, Minneapolis, Buffalo, and Rochester, in addition to the branch offices in New York, Detroit, Chicago, and San Francisco.

Wood Hydraulic Hoist Reports Optimistic Outlook for 1923

The Wood Hydraulic Hoist and Body Company, Detroit, Mich., manufacturers of Wood-Detroit hydraulic hoists and steel dump bodies for motor trucks, state that 1922 was one of the most successful years in their history. The sales of this company during 1922 exceeded their 1921 sales by over 100 per cent, and their spirit of optimism is reflected by their set production for 1923, which calls for an additional increase of 50 per cent over 1922.

During the last two years the engineers of this company have developed the under-body type of hoist for use with full-length bodies. This model of hoist is built in four sizes, to take care of the complete range of capacities of trucks. As a result, the 1922 sales of the Wood Company have placed several thousand under-body hoists in service with satisfactory results. The addition of this type of hoist, together with the addition of six new steel body types, enables them to offer a dumping unit suitable for any capacity or make of truck. The reports of the early 1923 sales of Wood-Detroit dump equipment, particularly to municipalities, indicate a general betterment of financial conditions and denote a big year in general municipal construction.

Jacobs Now Manager of Sales

The Electro Bleaching Gas Company, 18 East 41st Street, New York City, has announced the advancement of S. Willard Jacobs to the position of General Sales Manager, succeeding D. K. Bartlett, who has resigned. Mr. Jacobs is a chemical engineer and, aside from his work as a consultant on matters pertinent to the use of liquid chlorine, has supervised the installation of a number of chlorine plants and has gained a considerable reputation in this field.

Sauerman Brothers Move Offices

Sauerman Brothers, Chicago, Ill., for 17 years located in the Monadnock Block, have moved their offices, shops, warehouse and assembly room to 438 South Clinton Street. All but the office have been located at this address for some time, but now additional space has been acquired, making it possible to consolidate all departments of their business under one roof.



Bancroft School, Worcester, Mass.

EXCELSIOR Chain Link Fence meets the exacting necessities for the schoolhouse enclosure.

Because it is unclimbable it offers no temptation and accompanying accidents for the rising youth. Because it is galvanized *after* weaving it has rust proof qualities impossible in any other kind of steel fence. Its even, sturdy mesh construction harmonizes with the ideals of modern schoolhouse designs.

We shall be glad to submit estimates on fencing and gates in either chain link or our patent clamp construction, either in the fabric or erected.

WICKWIRE SPENCER STEEL CORPORATION

41 East Forty-second Street, New York

Worcester

Buffalo

Detroit

Chicago

San Francisco

Volume

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Threefold Foundation of Playground Success

THE expenditures of most American cities for playground equipment and supervision would be fully justified if playgrounds could do nothing but furnish wholesome *fun* for the community. There would be ample justification for such expenditures if a higher standard of public *health* were the only benefit possible. Similarly, the money would be well spent if the playgrounds could serve no other purpose than to train the *character* of the coming generation. But the modern municipal recreation system, if properly managed, will serve its community in all three of these essentials, and the argument for adequate appropriations, if based on this threefold foundation of playground success, will meet with favorable response in every forward-looking American city and town.

Fun is the birthright of every child and the prerogative of every adult. And fun is a human right in a far finer sense than that of mere pastime; for there are values inherent in clean sport and wholesome fun which far transcend that of "passing the time." Indeed, that anyone should wish, under normal conditions, merely to pass the time, is indicative either of a lack of imagination or of facilities to satisfy the imagination.

Health in the modern community is compounded of the mental and physical characteristics and habits of the individual and of the environment in which he lives. The highest skill of the sanitarian and the doc-

tor can be set at naught by the ignorant or deliberate delinquency of the individual. To help in overcoming such tendencies through efficient methods of physical education and body-building is the second of the three big contributions of the playground system to the public welfare.

Character is an attribute which is said by many alarmists to be conspicuous chiefly by its absence in the young people of today. With such views THE AMERICAN CITY has little sympathy; but we must recognize that the youth of the twentieth century are beset by certain temptations which either did not exist or had not become so clever and alluring in previous centuries. Herein lies a challenge which our community

FUN
HEALTH
CHARACTER

leaders—civic, religious and educational—must meet unless they are willing to admit that the powers of darkness must always be wiser in their generation than the children of light. The whole leisure-time problem must be given increasingly intelligent study; and such study will demonstrate, we are sure, that the playground can be made a factor of prime importance in the building of character. Statistics are already available as to the reduction in juvenile delinquency in neighborhoods adjacent to properly supervised play fields. Such preventive work, supplemented by training in clean sportsmanship and team play will bring to the coming generation increased mental and moral stamina of great importance to the future of mankind.

America Revisited--A City Planner's Impressions

A Comparison, by One of England's Foremost Town Planners, of Traffic Problems in American and European Cities

By Raymond Unwin

VISITING a number of American cities after a lapse of eleven or twelve years, one is struck by the enormous increase in the difficulty of moving about in the towns. So many motor cars are now in use that the value and time-saving capacity of each car has been greatly reduced. Particularly is this the case in the larger towns, where the difficulty and delay in getting about have certainly increased to a very considerable extent, owing to the stoppages at the very numerous cross-streets which result from the American system of planning, and owing to the difficulty of finding a place to park the car anywhere near the spot that is being visited.

It is a not uncommon experience now, in an American town, to find that it has taken as long to make a short journey by car as it would have done to walk. In parts of New York and Chicago, and probably in certain other cities, this traffic difficulty is so great that matters have almost reached a deadlock. In some cases, the queue of cars waiting to cross a street is two or three times the length that can be allowed to cross at one halt of the opposite traffic, and cars may have to wait through two, or even three, halts before their turn comes to cross one of the streets.

As compared with European towns, there are three circumstances which increase the difficulty in American cities:

1. The number of cars in proportion to population is very much greater in America—I should guess five to ten times as great.

2. Owing to the high buildings, the number of people wanting to occupy and use any piece of street is again from five to ten times as great as in an ordinary European city.

3. The general system of planning, which consists in a repetition of rectangular building blocks in a regular or sometimes irregular checker-board plan, results in the

maximum interruption of traffic owing to innumerable cross-streets, and in the minimum amount of natural sorting out and routing of traffic, such as takes place where main highways are planned or have grown up in such a manner as to link up the important centers and subsidiary routes in proper relation to them.

I am informed that in America there is on the average one motor car to every ten people, which means that in many cities the proportion of cars to population is much higher. It is time seriously to consider whether it is practicable to provide such a large street area as will allow all the citizens to move about the towns in their own cars. From 1,000 to 10,000 people may be working in a single lofty building, such as are found in the chief American cities, and if the normal proportion of cars is allotted to these people, it will be evident that no street area which it is possible to provide adjacent to such buildings would accommodate such a number of cars as would be required to enable the owners to use them for going to and from their business. Indeed, there are parts of New York in connection with which it has been calculated that the total street area does not provide standing room for more than one-third of the people who may be occupying the buildings in that area during the daytime; and that if they were all to try to occupy the adjacent streets at one time, they would have to stand upon one another's heads three deep. Not only does it seem to be impossible that such concentrated populations can move about comfortably in their own cars, but it appears to be equally impossible to deal satisfactorily with the resulting traffic in any form of public conveyance. If a new subway is opened, buildings may be erected on a few blocks which will practically occupy the full capacity of the subway at the busiest hours.

Disadvantages of Checker-Board Planning

The general system of planning in America does not lend itself to the free movement of traffic along the streets, and certainly does not tend to economy in street areas or to apportioning street areas according to the volume of traffic that they are likely to carry. With a checker-board street system there is no natural routing, no nearest way from one important point to another, unless both points happen to be on one street. There is a tendency for development to take place to an excessive

The delay on all main streets in a town of a checker-board plan, due to the innumerable interruptions liable to occur at every cross-street, is one which seriously aggravates the difficulty of dealing with traffic in most American cities—a difficulty which is already great enough owing to the number of motor cars and the height which has too often been adopted for the buildings. Moreover, this system of development applied to residential districts proves to be exceedingly costly. In areas occupied by single-family dwellings especially, the

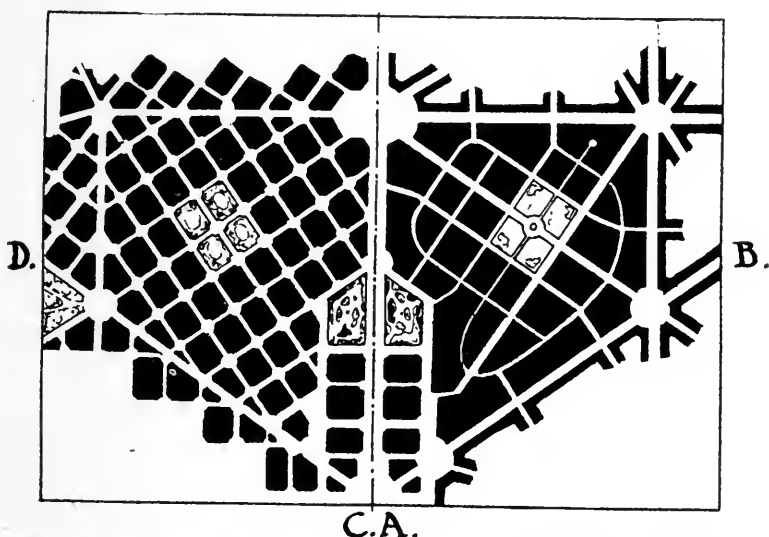


DIAGRAM SHOWING HOW THE PLANNING OF SUBSIDIARY STREETS IN RELATION TO THE MAIN ROADS PREVENTS TRAFFIC FROM BEING DISTURBED, AND THE FACADE OF THE BUILDINGS UNDULY BROKEN. CONTRAST THE FEW BREAKS AND CROSSING-POINTS ON THE ROAD A B WITH THOSE ON C D

extent along the lines of the roads leading from any important center in the two cardinal directions. Owing to the fact that no street is free from the liability to be used by main traffic, because every street, in turn, may offer an equally good route from one point to another, it is necessary to require a minimum width for all streets, which, in itself, is very extravagant and leads to much unnecessary waste of space and cost of street works. On the other hand, there being no clearly marked main routes, it is not easy to select a few main highways for traffic and not only construct these of adequate width, but also protect them from too frequent interruptions by cross-traffic—two equally necessary conditions for a good highway.

amount of road frontage which has to be provided and the amount of street area which has to be constructed and maintained per house is remarkably high as compared with what is common in similar development in Europe; and there is little doubt that this expensive and extravagant system of road provision is largely responsible for forcing people in the towns to build high blocks of apartments instead of self-contained houses.

At any rate, the preference of large numbers of American citizens for the self-contained house is quite evident, and, so far as one can judge, is increasing;—certainly, there appeared to be larger areas of this kind under development in the cities I visited than I noticed twelve years ago.

If this very healthy preference for the self-contained family house is to be provided for adequately, the question of a more economical kind of development is one deserving careful study on the part of owners of land, realtors, and city planners. It is not uncommon to find that the proportion of road-making and other similar development expenses per plot is two or three times as high as it would be in the garden city type of development in England. It is not clear that any advantage is obtained by this excessive road-making, and it certainly involves the creation of a multitude of opportunities for the interruption of traffic by needless cross-streets.

Wastefulness of Land Overcrowding

It has been realized in England for some time that the overcrowding of buildings upon land is a much more wasteful proceeding than at first sight appears; that, in fact, there is a very rapidly diminishing return of value and efficiency from such overcrowding, and that by properly adjusting the character of development and the amount of road-making to the number of houses put upon the land, it is usually possible to give ample space and garden ground at little, if any, greater cost than is involved in the more wasteful crowded development, which eats up the land with increased road area and leaves a diminishing amount to be divided among an increased number of houses. My observation of American cities leads me to think that there may be a not altogether dissimilar reducing return of efficiency from the piling up of stories one upon another.

Certainly, comparing London and New York, one is not conscious of any reduction in the distances which have to be traveled to get about the town or to get out of the town. Indeed, it seems to me to be more difficult to get out of New York to live in comparatively suburban or country surroundings than it does to get out of London; and the time occupied in keeping a number of appointments and getting from one to another in New York seems to be no less, and, indeed, frequently greater, than would be required in London. No doubt, if the appointments can be confined to people occupying the same building, there may be some economy of time. Economy in cost, however, is not so clear, and it would be interesting to know what

is the relative cost of vertical transport as compared with horizontal. When the area of building occupied by elevators is included, and allowance is made for the small number of people conveyed in each journey, it is a question whether considerably higher cost would not be shown for the vertical transport.

In the past, owing to the large volume of free immigration which has taken place in the United States, American cities have grown with such rapidity that they have had little enough time to do more than keep pace with the increase of population in the readiest and most obvious manner; and when all the circumstances are considered, the achievement of the modern American city is a very wonderful one. The solution of the problem of the high building, if it had to come, has been a masterly achievement of the American architects and engineers. With the limitation of immigration, this first rush may perhaps be abated and time and opportunity be available for more careful study and more deliberate planning of the future development of the American cities. The growth of the city planning and zoning movement during the last twelve years is a very remarkable testimony to the efforts which are being made to bring this great city development under proper control and to give it the necessary skilled guidance. It may be that further study of the problems involved, in the light of the changing conditions, will indicate the desirability of increasing the number of new towns rather than increasing indefinitely the size of those which have already reached or are rapidly reaching unwieldy dimensions. In regard to the latter, it may be possible to set bounds to their indefinite spread and to provide for their further growth by means of detached and properly arranged suburbs, satellite towns, or garden cities, so organized as to be self-contained as far as possible. While enjoying some benefit and making some contribution to the definitely centralized functions of the parent city, the satellites will have their own localized life, so to speak, consume their own smoke, and to the least possible extent complicate the transport and other difficulties of the present city. At least, this is the direction in which I see most prospect of finding some solution for many of the problems presented by the great modern city.

Is Chlorination Necessary for Municipal Water-Supplies?

Here Are the Answers from Some Typical Cities in Indiana

SOME city officials have the idea that the chlorination of a filtered water-supply or of a deep well supply is in the class with earrings—merely a decorative frill that is not necessary but simply gives a more comfortable feeling. One superintendent in Indiana states that the city water is filtered naturally and they do not use chlorination except in extreme emergencies. "Extreme emergency" means that typhoid organisms may have been well distributed throughout the city by contaminated water before it is realized that the emergency exists, and then "after the horse is stolen, the door is locked." If instead, at the expense of a few cents a day, all water was chlorinated, there would be no need of worrying about the possible extreme emergency.

In Terre Haute, which has the best-advertised and probably the most popular water company in the United States, Dow R. Gwinn, the President and Manager of the company, says he believes there is a direct relation between the number of city water consumers and the typhoid death rate. Owing to the ease with which water can be secured from the ground in Terre Haute, the company has for years had a less number of consumers than there are in most cities. For instance, after the company had been in business for 27 years, with a population of 35,000 at that time, there were only about 2,000 consumers. There is some question as to when chlorination really began in Terre Haute. In 1911, a hypochloride of lime apparatus was installed. In 1915, electrolytic cells for making chlorine gas were installed. In 1918, a Wallace & Tiernan apparatus was first used.

Beginning with 1908, the company has

kept a record of the typhoid deaths on premises supplied by the plant. This record would probably correspond more closely to the average record of the ordinary city where city water is used by practically all the inhabitants. The typhoid deaths per 100,000 on premises supplied from the plant were as follows: 1908, 0; 1909, 8.5; 1910, 7; giving an average of 5.2 cases per year for the three years prior to chlorination. The cases for the five years after the be-

ginning of chlorination were: 1911, 3; 1912, 5; 1913, 3; 1914, 3; 1915, 2; an average of 3.2 cases per year, showing an advantage in favor of chlorination.

In Evansville, Ind., chloride of lime was first used in 1913 and liquid chlorine in 1918.

For the two or three years prior to the beginning of chlorination, the typhoid death rate was 72 per 100,000, and for the five years after chlorination, 7 per 100,000. Charles Streithof, Superintendent of Water Works, believes that both filtration and chlorination are necessary for municipal water-supplies.

In Sheridan, Ind., chlorination was first used in November, 1921. The exact typhoid death rate is not known, but there have been no epidemics in Sheridan, and since chlorination began no cases of typhoid have been traceable to the municipal water-supply. One well, which was known to be contaminated, was successfully treated with chlorine without filtration. O. E. Layton, Secretary-Treasurer of the Sheridan Water, Light, Wells & Heat Company, states that he believes chlorination is an insurance against trouble.

In 1909, the Seymour Water Company, Seymour, Ind., began the chlorination of its water-supply. Prior to that time, there were one or two cases each year in the

Unanimous Agreement

These brief paragraphs represent a cross-section of opinion from one state chosen at random, but it will be seen that there is practically unanimous agreement that chlorination of municipal water-supplies is necessary and that it has been beneficial in reducing water-borne typhoid in cities wherever used.

000 population, but since chlorination begun no cases have been traceable to it. W. J. Peter, Superintendent, believes that chlorination is not generally effective without filtration, and that chlorination is necessary for practically all municipal water-supplies.

New Albany, Ind., has a population of about 25,000 supplied by the New Albany Water Works, owned by the Interstate Public Service Company. Chlorination was begun in 1916. The typhoid death rates for the five years prior to chlorination were: 1912, 5; 1913, 5; 1914, 1; 1915, 3; 1916, 4. Since that date the rate has been: 1917, 6; 1918, 5; 1919, 2; 1920, 1; 1921, 2. J. O. Endris, Jr., Superintendent of the New Albany Water Works, states

that the effectiveness of chlorination, with or without filtration, depends entirely upon the nature of the raw water, but that chlorination is absolutely necessary for municipal water-supplies.

The Valparaiso Home Water Company, Valparaiso, Ind., began filtering its water-supply in 1908 and began chlorinating in 1916. There has never been a case of typhoid traced to the city water-supply in Valparaiso. J. F. Bradley, Chief Engineer and Bacteriologist of the company, believes that chlorination is not generally effective without filtration, as its effectiveness is dependent upon the amount of iron or other oxidizable matter present. He says that, generally, chlorination is necessary for municipal water-supplies.

Cost of Pavement Repairs in Newark, New Jersey

A Method of Determining the Most Economical Pavement for City Streets

By J. W. Howard, C. E.

Consulting Engineer, New York City

NEWARK, N. J., is a manufacturing city of 500,000 population. It has heavy traffic of motor vehicles, not only within the city, but connecting it with New York, Philadelphia and other places. The streets are well paved and kept in good repair. The cost of repaving or maintaining each kind of pavement is analyzed and tabulated so as to determine what kinds of pavements are most economical for city streets.

The Annual Report for 1921 of the Director of Public Improvements shows the cost of repairs per square yard of pavement bases and of surface layers separately and

added together. The total of paved streets on December 31, 1921, was 282 miles. The principal kinds of pavements are shown in the table below.

The city has an excellent municipal asphalt paving plant, equipped with storage bins, conveyors, steam rollers and street tools. This plant cost \$76,355, not including the land. The plant repairs all old asphalt pavements and lays some new ones on new locations. The cost of repairs made by the city plant in 1921 to the pavements which have passed the five-year guaranteed periods of the original contractors is shown in the following table:

COST OF 1921 PAVEMENT REPAIRS BY NEWARK, N. J., CITY ASPHALT PLANT

| Kind of Pavement | Surface Layer | | Concrete Base | | Total Both* |
|---------------------|---------------|-------------|---------------|-------------|-------------|
| | Sq. Yds. | Per Sq. Yd. | Sq. Yds. | Per Sq. Yd. | |
| Sheet asphalt | 51,499 | \$1.8126 | 3,979 | \$2.3313 | \$4.1439 |
| Granite block | 27,815 | 1.5262 | 1,131 | 2.6651 | 4.1913 |
| Brick | 8,679 | 3.4968 | 3,236 | 4.1820 | 7.6788 |
| Asphalt block | 126 | 4.2169 | 59 | 2.9908 | 7.2077 |
| Wood block | 4,168 | 4.4164 | 3,487 | †1.5341 | 5.9505 |

* "Total Both" means where surface and base were repaired at same locations.

† Repairs to base of wood block pavement consisted of replacing injured 1-inch mortar cushion with another on the existing good 6- or 8-inch concrete base below.



NEW CONSOLIDATED GRAMMAR AND HIGH SCHOOL, LAUREL, DEL.

Fine Schools for Small Towns

A TRUST fund of approximately \$4,000,000, established by Pierre S. duPont for rebuilding the schools of Delaware, is being administered by the Delaware School Auxiliary Association, which is the Educational Committee of the Service Citizens of Delaware. Architects, engineers and professional assistants of high standing were secured for this work. The needs of the field were carefully studied by Drs. Strayer and Engelhardt of Columbia University, and their counsel is being followed as closely as possible. It is not planned to rebuild all the schools of Delaware, but to make a demonstration that will insure that other school buildings will be of the same high standard. One of

the new consolidated schools for white pupils is shown at the head of this page. It has 18 rooms and an auditorium, and can accommodate 600 pupils. It cost \$225,000, of which the Laurel Special School District raised \$55,000 and the Delaware School Auxiliary Association gave \$200,000. The town of Laurel has a population of 2,253.

Below is shown the new High School building for which Madison, N. J. (population, 5,523), on February 2, 1923, voted \$300,000. It will have 21 classrooms with a total capacity of 500 pupils, and special department rooms with accommodations for 150. The combination assembly room and gymnasium will seat 700.



MADISON, N. J., HAS VOTED TO BUILD THIS NEW HIGH SCHOOL

Unusual Paving Contract Proves Successful

Colorado Springs, Colo., Saves \$290,000 on Paving Project

COLORADO SPRINGS has recently completed the paving of 8 miles of city streets under conditions that are of unusual interest to every community. The pavement was laid by the Colorado Springs and Interurban Railway Company, the local street car utility, which was under a contract with the city to do the work at actual cost. In addition to accomplishing the work at a figure which is about \$200,000 less than the lowest contractor's bid, the street car company has just turned over to the city a complete paving plant, valued at \$90,000, making a total saving to the taxpayers of \$290,000.

The original estimate of the City Engineer called for an outlay of about \$1,100,000 for paving four principal thoroughfares of Colorado Springs with 2 inches of asphaltic concrete laid on a 5-inch concrete base. The first bids received from contractors in January, 1921, were considered too high, and all were rejected. The city again advertised the project, and again rejected all bids in March of that year as being still too high, though a reduction of \$45,000 from the January bids was made.

About that time, the trustees of the Myron Stratton Home, which owns the street car company, became interested in the paving project. Two considerations influenced the trustees: as the largest single taxpayer in the city, the Stratton estate was keenly interested in having the work done as economically as possible; and as public-spirited citizens the trustees wanted the community to derive the advantages from more paved streets.

After due consideration, the Stratton estate trustees submitted a proposal to the City Council whereby the street car company offered to do the paving at actual cost, the city to acquire title to the complete paving plant and equipment after the work was finished, and the city to have the right to take over the contract at any time it saw fit. To comply with the provisions of the city code, which called for a formal bid on the project, the street car company submitted a written agreement offering to

do the work for \$5,000 less than the lowest bid received from any contractor, or for a sum not to exceed \$864,000. Despite considerable opposition from paving contractors, the city awarded the street car company a contract in June, 1921.

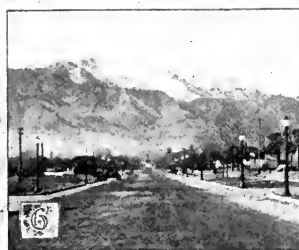
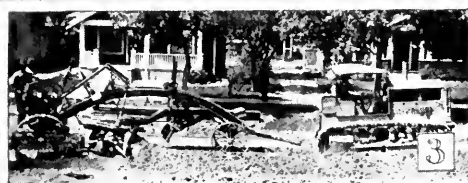
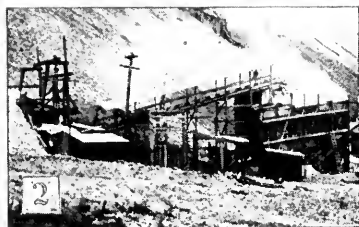
When it was awarded the paving contract, the street car company was without organization or equipment of any description for work of this kind and was forced immediately to purchase the necessary machinery and to develop an organization. Russell H. Kimball, an experienced paving man, was hired as superintendent, and was in charge of the project until its completion. The last bit of surfacing was laid in the fall of 1922, or fifteen months from the day the contract was awarded. The contract called for completion of the work in two years.

How They Did It

In addition to its large central mixing plant, the company also built a stone-crushing and screening plant at Victor, Colo., where it used 70,000 tons of rock from the dump of the Vindicator gold mine in the Cripple Creek district. All the coarse aggregate for the concrete base and asphaltic surface was crushed rock from this plant.

In view of the light average cut of approximately 6 to 7 inches which prevailed over the entire paving district, the company used the following method for the excavation work: One 10-ton Holt Caterpillar, an Austin Rip Snorter combination scarifier and blade machine, and two Barber-Greene bucket loaders were purchased. The scarifier and blade machine, with the Holt tractor, piled the earth in long windrows about 5 feet wide and 30 inches high, after which the B-G loaders elevated the dirt into wagons.

Through the use of the central mixing plant and motor trucks for hauling the mixture to the work, the concrete operations were conducted on a decidedly economical basis. Both fine and coarse aggregates were maintained in bins of approximately



SCENES FROM THE RECENT COLORADO SPRINGS PAVING JOB

1. One-cubic-yard Smith concrete mixing plant now owned by the city of Colorado Springs under the provisions of its contract with the Colorado Springs and Interurban Railway Company. 2. Rock-crushing and screening plant at Victor, Colo. The plant is composed of two No. 5 Allis-Chalmers gyratory crushers, one 10 x 18 jaw crusher and one 6-inch pair of rollers. 3. Holt 10-ton tractor towing Austin Rip-Snorter combination scarifier and blade grader during grading operations preparatory to paving. 4. Laying a 5-inch concrete base on North Cascade Avenue. 5. Laying concrete foundation on West Colorado Avenue without interfering with the operation of the double-track car line. 6. A stretch of pavement 50 feet wide between curbs on East Platte Avenue, showing Pike's Peak in the background

650 cubic yards capacity, the bins being constructed underneath a railway trestle, where material was received in steel-bottom dump-cars and emptied directly into the bins. Aggregates were conveyed from underneath the bins by means of a conveyor belt to a double elevator, which carried the material up to an auxiliary 20-cubic-yard bunker. This, in turn, discharged directly into the measuring batch hopper, where, in turn, the material was fed directly into a 27-cubic-foot Smith tilting mixer.

Cement was received in car-loads on the same trestle and unloaded directly from cars to batch hopper by gravity chute. When the plant was not in operation, cement was conveyed to a storage warehouse by gravity chute from the same car location. The warehouse had a capacity of 10 car-loads and was kept filled to capacity. When the plant was in operation and without cars of cement on the track, cement was delivered to the batch hopper by means of an inclined conveyor belt from the warehouse. The same labor handled the cement in both instances.

The total mixing plant labor costs were $3\frac{1}{2}$ cents per square yard, while the costs of power, repair parts, maintenance, interest and depreciation were $2\frac{1}{2}$ cents per square yard.

The plant had an average output of 5-inch concrete base of more than 2,300 square yards a day, the biggest day's run being 419 cubic yards, working 9 hours. The average mixing time was 1 minute and 20 seconds, and the average haul 2 miles. The plant was the feeder for ten $3\frac{1}{2}$ -ton and four 5-ton trucks. The cost of street labor for laying the 5-inch foundation was $4\frac{1}{2}$ cents per square yard.

The company's paving department constructed its own asphalt mixing plant, using two old ore roasters, 66 inches in diameter, which were extended to 20 feet in length and were fed by conveyor belts from the

rock and sand bunkers. The roasters were fired by internal combustion fuel oil burners. The heated aggregates were elevated and screened into a 20-cubic-yard steel bunker. This, in turn, fed in a weight box on a five-beam scale, which discharged the material into a 16-cubic-foot pug-mixer. Mexican asphalt purchased from the Standard Oil Company of Louisiana was supplied in tank cars and was run by gravity from the cars into a concrete sump having a 70,000-gallon capacity. The sump was fitted with sufficient steam-heated coils to maintain the asphalt at a temperature of from 280 to 300 degrees in the heated end of the sump. Asphalt was pumped from the sump direct to the pug-mixer. Limestone dust was used as a filler.

The cost of the asphalt mixing plant was slightly more than \$11,000, and it delivered the 2-inch surfacing material at a cost of 12 cents per square yard for plant and street labor. Power, coal and fuel oil, repairs and repair labor amounted to 7.2 cents per square yard. Constructing the asphalt wearing surface involved a liquid seal coat with a stone chip squeegee. Two 8-ton tandem rollers were used, the average specific gravity obtained for the completed pavement being 2.21. The contract also involved the installation of more than 76,000 lineal feet of curb and gutter as well as a large amount of storm sewer.

Now that the work is completed, is the city satisfied with its novel paving contract? One of the best answers to that question may be found in the fact that since the street paving was finished, the city, on its own account, has paved all the alleys in the business district, using the paving plant it acquired under the terms of its contract with the street car company and employing the company's organization. It is also planning to pave North Nevada Avenue, one of the main north-and-south thoroughfares, during the next construction season.

What Cities Spend for Street Lighting

According to the latest available data, the average total municipal expenditure per capita for street lighting for all cities in the United States of over 30,000 population in 1919 was \$21.23. Of the \$5.25 spent for safety and protection, 72 cents was for street lighting. The over-all service purchased by the \$5.25 expenditure could be greatly improved by a reallocation which would increase the street lighting budget by a few cents.

—A. F. DICKERSON.

Clean-up Campaigns--and After

THE futility of community clean-up campaigns that are merely "a lick and a promise," and the effectiveness of real campaigns, well planned and properly conducted, are emphasized in the 1923 spring "Extra" of *Spotless Town News*, published by the National Clean-up and Paint-up Campaign Bureau. Says the editor:

"A 'day' is merely pathetic, and a 'week' is hardly long enough to make even a fair start. 'Make it a 'campaign' and keep it up as long as may be necessary to do a real job; then renew it on the same basis, spring—and fall, to 'get ready for the indoor months.'

"That's the first essential of any successful community effort in such work.

"The second essential is to publicly commit to the new order of things, whatever is cleaned up; for example, converting the unsightly dump into a playground, or painting the vacant lot with the green of grass and shrubbery or a thrift garden—but, however it be done, 'clothe it in the garb of righteousness,' and thereafter its cleanliness and orderliness will be respected by everybody.

"These facts are generally realized most of all by those city officials who look after the community cleanliness and health, and generally with inadequate budgets. It is impossible for them to coordinate their efforts with those of every household within a six-day period, though the public cooperation that can be enlisted in a real campaign is invaluable to them, and to the community, in the visible and lasting results secured and in the sense of personal responsibility for continuous care-taking in these matters that is inculcated by such a campaign.

"To 'get the habit' is the thing, and that never can be done in the annual bath of a 'day' or a 'week.'"

For communities which have not yet completed plans for their 1923 clean-up work, many valuable suggestions can be obtained on application to the National Clean-up and Paint-up Campaign Bureau, Pontiac Building, St. Louis, Mo.

From Cleveland, Ohio, THE AMERICAN CITY has received the complaint blank shown below, which was published last spring in the newspapers and of

which many thousands were also distributed in the schools. These were used as a means of discovering bad conditions not remedied during the intensive period of the clean-up campaign. Miss Ruth F. Stone, Executive Secretary of the Community Betterment Council of Cleveland, writes:

"We had 2,943 complaints following last year's clean-up campaign, which were divided for types under the following divisions:

| | |
|--|-------|
| Lack of garbage collection..... | 245 |
| Unsanitary conditions, reported to the Division of Health | 1,500 |
| Lack of street cleaning, reported to the Division of Streets | 829 |
| Defective sewers or catch-basins, reported to the Division of Engineering..... | 16 |
| Unsanitary toilets in the public parks, reported to the Department of Parks and Public Property | 5 |
| Fire menaces, reported to the Fire Marshal... | 31 |
| Smoke nuisances, reported to the Division of Smoke and to the Women's City Club, which are conducting a Smoke Abatement Campaign in cooperation with our work..... | 48 |
| Bad moral conditions and bootlegging, reported to the Police Department..... | 5 |
| Complaint reported to the Animal Protective League | 1 |
| Miscellaneous complaints received from suburban communities | 263 |

"It is the expressed opinion of these officials, and especially of the Commissioner of Health of Cleveland, that our work is of great assistance to them in following definite and bona fide complaints which otherwise do not reach their attention. Dr. H. L. Rockwood, Commissioner of Health, has assured me that the 1,500 reports referred to his department alone give his Sanitary Police much more definite data than are otherwise secured through the casual telephone reports that drift into his office.

Make—Keep Cleveland Clean and Bright

The Community Betterment Council
509 Electric Building (Main One)

I wish to report the following unsanitary and unclean condition existing

| Check Condition Complained of | Re-marks—Detailed |
|-----------------------------------|-------------------|
| Dirty Street, or Alley, or Lot | |
| Garbage Collection Needed | |
| Rubbish or Ash Collection Needed | |
| Clogged Catchbasins, or Sewers | |
| Dirty Coop, Pen, or Kennel | |
| Yard, Dump, or Other Dirty Places | |
| Smoking Chimneys (dense smoke) | |

Reported by.....

Phone.....

Address.....

"The educational phase of this work as it reaches school children is, of course, one of the most valuable things we do. We feel that in a large industrial city, with 75 to 80 per cent foreign-born population, much education is needed by the children of these families in understanding and interpreting to their parents what the city ordinances are and what responsibility devolves upon the citizens to cooperate with the city officials toward making these ordinances effective.

"Following our campaign of this year, which is already under way with the Clean-up Week scheduled for the last week in April, it is our plan to go into various districts of the city

the rest of the year and through organization with mothers' clubs and other neighborhood groups to do a more intensive piece of educational work. We shall have cooperating with us in this effort the Cuyahoga County Public Health Association. Tentative plans have been prepared for Health Weeks in these districts, during which talks will be given on sanitation, baby care, care of the pre-school-age child, mouth hygiene, nutrition, and other topics relating to a health program. We are working in this way toward a year-round program on health education, making the spring campaign only one intensive effort to facilitate the proper cooperation between city departments and the people."

Street Sanitation Officials in Clean-up Campaigns.

IN the discussion at the last annual conference of the International Association of Street Sanitation Officials, several of the delegates outlined the methods used in their respective cities in conducting clean-up campaigns. The following statements, based on this discussion, may offer suggestions to officials and organizations which have not yet perfected their plans for a clean-up week or other special waste-disposal effort for the spring of 1923. In general, it may be said that the experience of most cities has shown that the newspapers are usually very glad to give special publicity to such a campaign, and that the cooperation of schools, civic organizations, Boy and Girl Scouts, and the citizens generally, can readily be secured.

St. Louis

The annual spring clean-up week in St. Louis is a joint effort of the various city departments. With the help of a publicity agent, they start their educational campaign through the newspapers, and otherwise, the last week of March, and the campaign is pretty well prepared before the last week in April.

On every team of each of the various departments, a placard is placed, reading "Clean-up Brigade." The teams start at the west side of the town and work toward the river, beginning Monday and continuing until Saturday. The police distribute a circular letter to each household, with instructions to have all household rubbish collected and placed in the alleys at the occupant's gate on the day when the Brigade will pass through that territory.

Especially valuable aid is secured from the women's organizations and the paint trade, which last year contributed \$2,000 to help in the work.

The sanitary officers, in the two months before clean-up week, go through the houses and yards and into the basements and make an inspection, pointing out to the householder what he should get rid of. After the clean-up week, the paint people put on a paint-up campaign

and in that way they get back their \$2,000.

Richmond, Va.

In Richmond the clean-up week is handled by the Department of Public Works. City equipment is used, except when necessary to secure one or two contractors to help in hauling out the material. The clean-up campaign secures in one collection much rubbish that would have to be collected piecemeal, later, and it therefore cuts the expenses of cleaning throughout the year. Not only is rubbish taken from the households, but the alleys and streets are given a thorough cleaning.

Evanston, Ill.

There is no definite clean-up week in Evanston, but an unusual amount of rubbish is collected on moving days in May and October. Also two or three times a year the fire department makes an inspection of basements, corners and other places which should be cleaned up. The waste is thrown into the alleys and collected by the city.

Normally 450 cubic yards of rubbish are collected from the 43,000 people in the city. A large quantity of Chicago newspapers, amounting to between 125 and 150 yards a day, are collected. The rest of the rubbish is miscellaneous material, such as bed springs, baby carriages, wash boilers, gas stoves, etc.

Boston, Mass.

The clean-up period in Boston extends over much time. There are two weeks for publicity and two weeks of actual clean-up of everything that is put out in alleys and public streets. During the rest of the year the refuse must be placed in wood barrels for paper, and metal barrels for ashes and rubbish.

Clean-up time is a four-weeks affair throughout the entire state of Massachusetts, and there is a great deal of interest shown by civic organizations. The New England Clean-up and Paint-up Campaign Committee offers a \$500 silver loving cup as an annual prize to the "cleanest town" in New England. This trophy was captured by Boston five years ago. Since then smaller towns have done better work, as they have had more effective cooperation from school children, newspapers and the public.

Utility and Beauty versus Extravagance in Street Planning

By Frederick Bigger

Architect and Town Planner, Citizens Committee on City Plan of Pittsburgh

IT is an old theme that utility and beauty are not irreconcilable. One of the views here shown illustrates this point, the contrasting view having "extravagance" written all over it!

These two views of streets in Pittsburgh appear in a recent issue of *Progress*, the monthly organ of the unofficial Citizens Committee on City Plan of Pittsburgh. The editor of *Progress* selected these views to bring home to the people of the city the strong contrast between a properly and an improperly designed residence street. In technical journals this differentiation has been made many times by the use of diagram cross-sections of streets. These are frequently confusing to

the layman. Consequently there is an advantage to the latter in examining photographs of actual examples. The writer has used these contrasting views constantly in city planning talks given locally during the



WIGHTMAN STREET, PITTSBURGH, PA., IS AN INSTANCE OF EXTRAVAGANCE IN STREET PLANNING

last eight years.

In the view of McPherson Boulevard the layman can see at once that the street is more attractive than the contrasting view of Wightman Street. In the latter it is evi-

dent that the wide roadway is suitable only for a heavily traveled thoroughfare and is not adapted to the more localized traffic which, on Wightman Street, is far from great. Here we have extravagant expenditure for the initial construction of the wide expanse of paved roadway, as well as for its periodical



MCPHERSON BOULEVARD, PITTSBURGH, IS AN EXAMPLE OF GOOD STREET DESIGN

repair and maintenance. The paved expanse in summer is hot and dusty, thereby affecting the adjoining residences unhealthfully and unpleasantly. Space which might be used for the planting of grass, trees, shrubs and flowers is given over to paving which is not needed.

McPherson Boulevard, on the other hand, has a street design admirably adapted to its purpose. Each of the two roadways is adequate for the small amount of traffic which moves in either direction upon this residence street. The separating, "parked" strip therefore simplifies this light vehicular movement. Cross-overs, or spaces to turn about, are provided by breaking through the parked strip at street intersections and, in the case of long blocks, midway of the block. The demands of utility are therefore met in a most reasonable way. Moreover, the parked strip offers opportunity for planting which may vary from a simple lawn to a

fuller planting such as is here shown. This depends for its artistic success upon the civic spirit of the community, the funds available, and the abilities of the landscape designer. One can readily imagine a more luxuriant and beautiful planting than that shown in the picture, but it should not be forgotten that an even simpler scheme of planting may be quite beautiful if arranged by a capable designer.

Finally, one may well remember that it is often desirable to design a street in such a way as to discourage its use by "through" traffic, or even by any great quantity of local traffic. McPherson Boulevard, which is really a boulevard in name only and is not a long street, is a good example of such design. No better guiding principle could be found than that of designing each street for its particular use and not, mistakenly, for a multitude of uses that conflict with each other.

The Municipal Bond Situation

By Sanders Shanks, Jr.

Editor of *The Bond Buyer*

STATES, counties, cities and other political subdivisions have passed through an unusual period since the signing of the Armistice, from the standpoint of finance. Confronted with tremendous improvement programs, public officials found it necessary early in 1919 and in succeeding years to negotiate loans in an amount hitherto unheard of in municipal finance. In 1919, 1920, 1921 and 1922, permanent state and municipal loans floated amounted to \$4,000,000,000. In the preceding four-year period, 1915-1918, the total was only \$1,700,000,000!

It would be but natural to assume that this great expansion in the supply of new bonds would have increased the difficulties of marketing the individual issues of securities and result in seriously depressing their market value. But, on the contrary, the record of the period shows that in the face of the huge borrowings of 1921 and 1922 (total for these two years was \$2,500,000,000) market values advanced steadily and are to-day on a level just under the pre-war values of 1917.

The perpendicular advance of bond

values which took place between July, 1921, and the fall of last year was general. All interesting-bearing securities participated in this upward movement, but state and municipal bonds have gone further than have other classes of securities and in recent months have withstood the pressure of economic factors before which bond prices generally have not been able to stand up.

The answer to the unusual strength of municipal bonds is their exemption from the Federal Income Tax. Under the present schedule, investors enjoying incomes of but moderate proportions are virtually compelled to invest in tax-free securities. Such buyers appear to have inexhaustible resources with which to absorb all the securities which the thousands of municipalities care to offer them. Just at this particular time an added incentive to purchase state and city bonds is furnished by the expiration on June 30 next of temporary exemptions on Liberty bond holdings. Many investors who have held Liberty bonds tax-free up to now are arranging to substitute therefor securities which will continue to bring in wholly exempt income.

There is every indication that the current year will be another period of borrowing activity. Almost all the state legislatures are in session or will be some time during the year, which means that an unusual number of bond issues will be authorized. In addition to city and county loans, a considerable amount of state borrowing for road building and to pay bonuses to ex-soldiers must be arranged for.

It is possible that before the year is out, bond market conditions will not be so favorable as they are to-day. The general tendency for interest rates to rise will eventually overcome special factors favoring municipals, such as tax-exemption. If

bond prices continue to decline, "municipals" will eventually follow. Consideration must also be given to the fact that the flow of tax-free bonds into the investment markets is being increased by the rapid creation of a huge mass of exempt Federal farm loan bonds and, under a new Federal act, there is now to be added a new class of shorter-term rural credit bonds, the total authorized issue of which at this time is no less than \$600,000,000.

There is present in the situation the danger of the tax-free bond market's finally being oversupplied, with perhaps a resultant serious break in selling values. This is possible, but not very probable.

With Proper Forethought in Good Times There Need Be No Bad Times

IN the expansion of public works when business depression is imminent, lies the natural and fundamental remedy for unemployment.

To secure nation-wide recognition for this idea during the present period of business prosperity is the object of the National Unemployment League, organized in January last with temporary offices at 190 Montague Street, Brooklyn, New York. George Foster Peabody is Honorary President; Darwin J. Meserole, President; Alfred J. Boulton, S. Parkes Cadman, Harry Emerson Fosdick, John A. Ryan and Mary K. Simkhovitch, Vice-Presidents, and Louis H. Pink, Secretary-Treasurer.

By the educational process of securing and publishing the facts concerning industry as they relate to unemployment, the League hopes to have accepted as a general principle and an absolute right by the people as a whole—and therefore by their representatives in the legislative bodies of the states and nation—that all workers are entitled to employment and that the fear of unemployment, with its accompanying poverty and distress, shall be abolished.

Just prior to the adjournment of the last session of Congress an identic bill, prepared by the League and introduced in the Senate and House on February 3, 1923, was reported favorably by committees of both houses, but failed of passage in the closing days of Congress. This bill provided for the creation of a Commission on Unemployment to make investigations to determine

where the public interest can best be served by the development of roads, afforestation and drainage and irrigation of waste lands, and to secure the cooperation of state and municipal officials in planning for public works to be undertaken when the next business depression occurs. The League hopes to create sufficient sentiment for such a measure to secure its passage at the next session of Congress. In a statement entitled "The Problem of Unemployment and a Remedy," the League says:

"As private industry slows down, and ordinary production is curtailed, what argument can there be against turning the displaced labor into the channels of public improvements, creating a network of roads throughout the country; projects of afforestation, and drainage and irrigation of waste lands; national electrification for light, heat and power; and the development of water power?

"When it is understood that for every man employed upon such public work as road construction, three others—men and women—are required in the regular industries of the country in making, preparing and transporting the materials for such project, it can readily be seen that it is not a problem of employing *all* the unemployed on public works, but that the employment of one-third, or, possibly even one-fifth of the idle on such work would so revive the industrial life of the whole nation as to eliminate all involuntary unemployment.

"The method of setting in operation such public works is, of course, the usual governmental means of legislation through the exercise of the police power, right of eminent domain, and taxation. Neither bonded indebtedness—for short terms—nor taxation for such sorely needed public improvements would be felt by a people given the assurance of permanent employment."

Municipal Electric Plant Shows Big Profits

South Norwalk Electric Works Show Profit of \$32,000 for Fiscal Year

THE South Norwalk, Conn., Electric Works represent as a property an investment of \$337,718.43, from which \$87,718.43 has been deducted for obsolescence and other shrinkage, leaving a plant value of \$250,000. This sum is considered merely as an estimated standard for the net value of its physical assets and is not intended by any means as a total valuation. To determine the plant's full value would involve the addition of a considerable sum to cover the worth of its rights and earning ability as a profitable and going concern, but whatever the plant's true value, it is all surplus, as every dollar of its investment was liquidated many years ago entirely by earnings from the service that it sold at low rates without aid whatsoever from taxes. All its subsequent investments have not only been paid for in the same manner, but have also contributed many thousands of dollars for the public good. There is now a reserve fund of \$30,376.92 that is being accumulated to help the cost of betterment of the plant.

While the income for the last fiscal year, August, 1921, to July, 1922, was \$141,204.49, the largest ever attained by the plant, and exceeded the previous year's income of \$131,432.57, the operating expense for the last year is \$2,817.88 less than that of \$111,697.71 for the previous year, which was the most expensive year as regards operation. The gross profits for this last year also are the largest which have been received, with a margin of \$5,047.55 over the former largest profit of \$27,277.11 for 1913. This is particularly gratifying when it is realized that the rates were reduced last autumn. In the main the income and profit increases may be largely attributed

to the extraordinary growth in the use of electricity and power in lighting and other industrial and domestic purposes, which continues at an unexpected rate. This domestic use is indicated by the increase of nearly 27 per cent in the output of 2,100,312 kilowatt hours for the fiscal year of 1921 to 2,546,827 kilowatt hours in the last fiscal year. There have been some reductions in the operation costs, but they are still very high as compared to those of pre-war times, and present conditions offer no reliable prospect of any immediate relief.

At the South Norwalk Electric Works the Golden Rule has been the basis of all relations with employees, patrons and others with whom the plant has dealt, and no court has ever heard an appeal for justice between them and the plant. The plant management and the employees are appreciative of the record and are striving in every way to maintain it without a break.

Capacity Increase of Plant

Considerable capacity increase and improvement to the plant was authorized in 1920, but further work on an extensive scale was deferred after the first section was completed early in

1921. This course was taken because the unfavorable conditions, uncertainties and high costs of equipment and construction made it advisable not to proceed faster than the immediate future required, but as the constantly growing demand on the plant has increased within the last few months to unexpected proportions and is showing no diminution, and as the older parts of the equipment can no longer be depended upon except as an unsuitable and insufficient auxiliary to the new plant, plans are being laid to prepare for a resumption of work upon such a scale and at such a pace as to keep up with the needs of the plant. This work will not be completed, however, until about 1925.

30 Years Without a Fatal Accident

This plant has had its share of accidents, but fortunately none has ever reached the magnitude of a calamity, and its service has

been fully as reliable, especially in times of extreme emergency, as the average similar plant throughout the country. During its 30 years of operation, it has never been the cause of a death or a serious injury to any one. It established its own form of

compensation long before the law for such purpose was created, and it has always allowed its regular employees full pay when too ill for work; if they are injured in service, medical or hospital charges are paid by the plant in addition to full wages.

Oxyacetylene Torches for Melting Joints in Water-Mains

By J. C. Michie

Superintendent of Water-Works, Durham, N. C.

THERE have been a few times in water-works practise when I have used the oxyacetylene torch for cutting metal, but I will confine my discussion to its use in melting out lead joints in cast iron pipe. The rapid growth of our city has required the removal of 6-inch pipe lines to be replaced by larger mains, to reinforce the distribution system. In the last three years about 4 miles of 4-inch pipe also have been taken up.

To melt the joints, we tried the old scheme of building wood fires at the joints. This is slow and expensive and often heats the pipe to a higher temperature than 612 degrees Fahrenheit, the melting temperature of lead, as it is impossible to control wood fire heat. This destroys the coating on the pipe and injures its usefulness for future use in the distribution system.

We experimented with a kerosene torch with practically the same results, and then I began looking for a more practical and less harmful method of melting the joints. Being unable to secure any definite information with regard to the use of the oxyacetylene torch for this work, I bought an outfit and began experimenting. We are using the Oxweld type of cutting and welding apparatus and have found that the No. 6 tip, which is a fraction of an inch larger than the cutting tip, gives the best results in melting out joints.

Methods Developed for Melting Joints

First, the correct flame is secured by manipulating the valve on the blowpipe. After the water has been drained out of the line and the surface of the lead joint thoroughly cleaned, the flame is applied to

the joint at the top of the pipe. When the lead begins to flow, follow it down the sides of the pipe, keeping the flowing surface at an angle of about 30 degrees with the bore of the pipe, which allows the lead to run off freely as soon as it becomes molten. The same operation is repeated on the opposite side of the joint. It is found that all of the lead runs off freely, except a small quantity in the bottom of the bell, which has to be burned or oxidized and passes off in a vapor, leaving a white deposit of oxide of lead on the pipe. The average time required to melt a 6-inch pipe is about ten minutes when the flame is properly regulated.

This method of melting out lead joints will not injure the coating of the pipe, except on the spigot end of the pipe for a distance equal to the depth of the lead in the joint. It is impossible to hold one's hand on the bell of the pipe without discomfort during the melting. The use of oxyacetylene is particularly useful and rapid in taking a valve off a pipe, as it can be done without the slightest injury to the valves or the seat. It saves the old practise of cutting off a 6-inch nipple and smashing it out of a valve hub with a sledge hammer.

It is most important to secure a correct flame, and it takes some practise and experience. The neutral or correct flame for melting lead is a clear, sharp, white cone about $\frac{3}{8}$ -inch or $\frac{1}{2}$ -inch long, measuring from the end of the tip. The best method of training raw labor is to select a fairly intelligent calker or preferably an all-round pipe man, explain the principles, give him the torch, and enforce practise on melting out joints at the scrap pile. The man will

soon become interested, and will surprise the superintendent with the result.

Use and Abuse of Oxyacetylene Equipment

Oxygen cylinder valves should be opened slightly to blow out any dust or grit in the nipple before attaching the regulator. Turn on the oxygen slowly to prevent injury to the regulator, as the cylinder carries about 1,800 pounds pressure to the square inch. The cylinder should be handled carefully and not dropped from a truck onto a hard pavement, because although it looks strong, the cylinder valve might be injured or the blow might cause a serious explosion.

The acetylene cylinder valve should never be opened in a building, as acetylene is inflammable and when mixed with air in the proper proportions forms a high ex-

plosive. Keep oil away from the oxygen cylinder valves, as the presence of oil may ruin the regulator. If any lubricant, either on the oxygen valve or the acetylene valve, is needed, use soap.

Too much care cannot be taken with the regulators. They should be kept in perfect condition, so that they are active and dependable. Follow the instructions and never do any guessing in handling these two gases. Suitable hand trucks should be provided for the cylinders, as they make for convenience and economy in the work. Always keep the cylinders in a vertical position. Take pride in your equipment, keep it clean and in good shape, and it will reward you with good service.

ACKNOWLEDGMENT.—From a paper read before the North Carolina Section of the American Water Works Association, November, 1922.

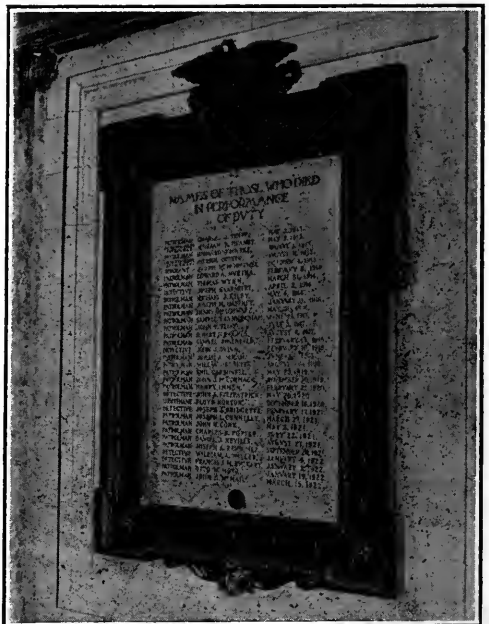
Hero Tablets at Police Headquarters

ON either side of the main stairway of Police Headquarters in New York City is a tablet dedicated to the memory of policemen who died in the performance of duty. As far back as 1908 the Committee on Permanent Work of the Municipal Art Society recommended that such a memorial be given to the new building of the Police Department, and in the same year the directors of the Society voted a definite appropriation for this purpose, and a committee was appointed to cooperate with the architects of the building in making a suitable design for the tablets.

These memorials are of marble on which are inscribed in bronze letters the names of the heroic dead, each tablet set in an ornamental frame of bronze with elaborately sculptured details and appropriate symbols, and at the top of each panel is the inscription, "Names of those who died in performance of duty." The tablets were completed by October, 1910, and were unveiled at Police Headquarters on May 11, 1912, before a large audience.

The first group of names was selected by a committee of citizens who went back to 1854 for their first police hero. Afterward the names of succeeding heroes were submitted to the Municipal Art Society by the Police Department from time to time, and the Society bore the expense of transcribing

the names in bronze on the tablets. The cost of inscribing the 67 names was \$835, and the cost of the tablets was \$2,075, making the total amount \$2,910. The addition of the most recent names, in January, 1923, completes the gift.



HERO TABLET, POLICE HEADQUARTERS, NEW YORK

Thumb-Nail Sketches of the Four Principal Types of City Government

By H. W. Dodds

Secretary, National Municipal League

THERE are four principal types of city government in the United States.

Each type is here described in a few words, with a brief digest of the leading arguments employed by the friends and enemies of each plan:

1. The Decentralized Plan

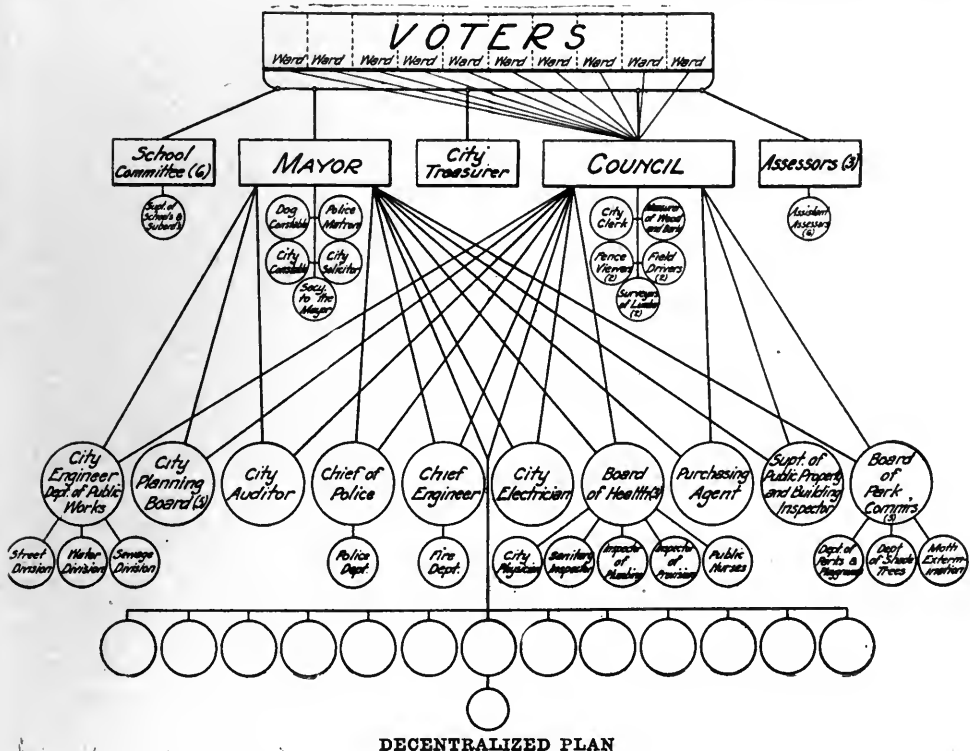
Description.—The mayor is elected on a partisan ticket by popular vote, along with numerous other officers, such as auditor, treasurer, assessors, city engineer, etc. The council is large and is elected by wards on a partisan ticket. Those administrative officials not elected are appointed by the mayor with the consent of the council. There are usually a number of administrative boards with overlapping terms (often longer than the term of the mayor); for example, a water board, a park board, a board of health, etc.

Ordinances (local laws) are passed by the council and may be vetoed by the mayor.

The rank and file of city employees may or may not be under civil service.

Arguments Pro.—The large council elected by wards assures that every section of the city will be represented. Partisan elections preserve intact in the city our national political parties. The mayor, being compelled to share the appointing power with the council, is prevented from becoming an autocrat. The election of other administrative officials besides the mayor and the appointment of boards rather than single administrative heads for some departments prevent centralization of authority in a single person, which is undesirable and dangerous.

Arguments Contra.—Experience has shown that a small council not elected by wards secures a higher type of official than the ward system, which gives nothing better than the ward politician. Since ward lines are, gener-



DECENTRALIZED PLAN

ally speaking, purely arbitrary divisions of a city, there is no real need for ward representation. Election by wards starts log-rolling between wards for special favors. The election of a large number of officials makes a long ballot, which means that the voter cannot know the quality of all those named on the ballot and so votes the whole ticket as the boss has planned it. The boss and not the voter, therefore, decides who will be elected.

The fact that the mayor is compelled to share the appointing power with the council, together with the fact that some administrative officials are elected, scatters and diffuses administrative responsibility. This is wasteful and inefficient because there is no centralized power of control and supervision to coordinate various activities.

The mayor, being elected and often anxious for reelection, has political debts to pay.

The mayor and elected officials are usually politicians and amateurs in the highly technical business of the city.

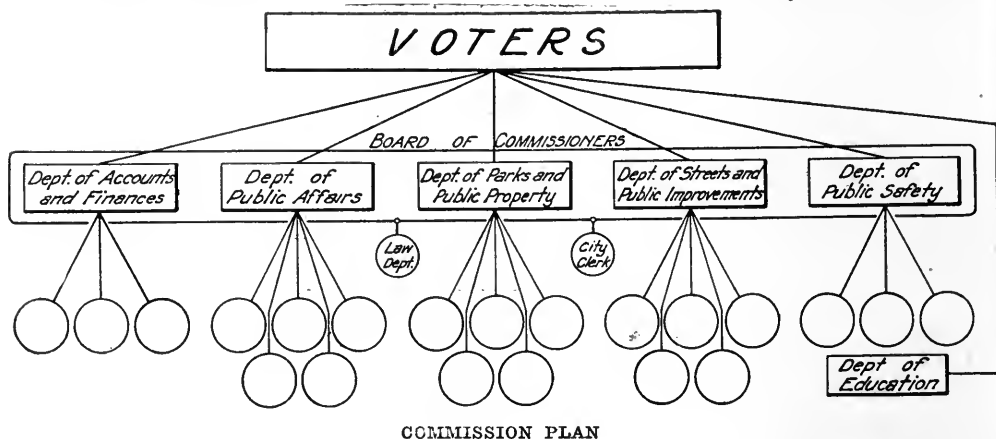
The partisan ticket causes the voters to

cies as a board. The work of the city is organized into five departments, with one commissioner at the head of each department.

The rank and file of city employees may or may not be under civil service.

Arguments Pro.—All the affairs of the city are centralized in the hands of a single commission which can be easily watched by the voters. Election at large secures a high type of man. Election of only five makes it possible for the people to know all about all the candidates. A small group can transact business with more facility than a large council. The commission is responsible for both the tax rate and the service.

Arguments Contra.—Commission government is five-headed administration. Administrative policy therefore is a series of compromises. The head of a department finds himself constantly overruled by the vote of other members. One of two results follows: either friction develops among the members, resulting in stalemate; or each commissioner is permitted to go his own way without considera-



divide along national party lines rather than on local issues, which should properly be the issues of a municipal election.

The city government, not being organized along lines of clear-cut responsibility which the people can enforce, falls into the hands of the political boss, who pulls the wires of the extremely complicated organization, which the average citizen cannot understand.

A simple government is the most democratic because it is the easiest for the people to control. A complex government baffles all but the experts.

2. The Commission Plan

Description.—The people elect a commission of five persons who are responsible both for legislation and for the administration of the city. They are elected at large on a non-partisan ticket. One of the commissioners is named mayor, usually by his colleagues, but his powers are ceremonial only.

The five commissioners sitting together pass ordinances and determine administrative poli-

tion of other departments or the city as a whole. The city gets five little governments.

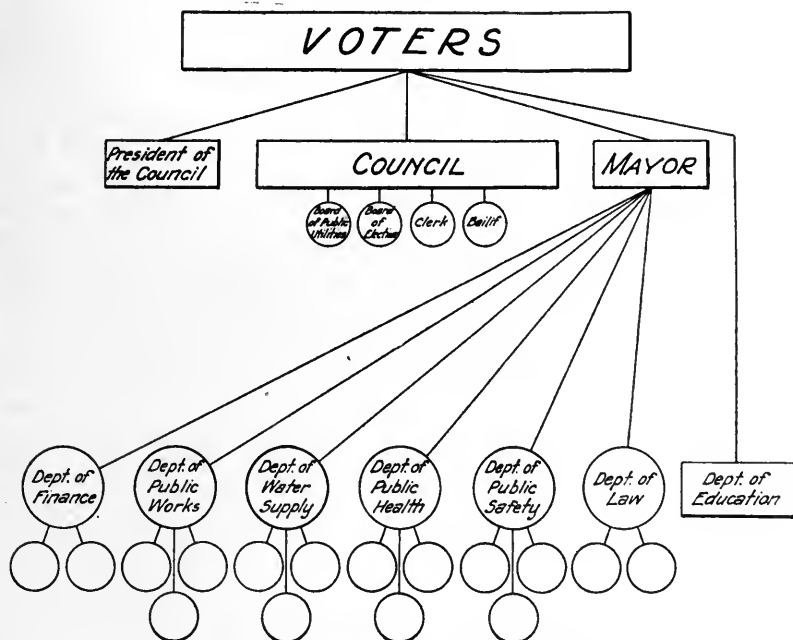
The commissioners, being elected on political platforms as legislators, are rarely good executives and scarcely ever experienced in the administration of municipal activities.

Many popular and trustworthy persons who would make good members of a legislative body are not by nature or equipment fitted to be executive heads of a city department.

The appropriating power and spending power are in the same hands, which encourages extravagances.

3. The Centralized Mayor-Council Plan

Description.—The mayor is elected by the people, sometimes on a partisan but usually on a non-partisan ballot, no other administrative officials being elected except perhaps the auditor or comptroller. The council is small in number, elected either by wards or at large. Confirmation by the council in administrative appointments is not required. The mayor has the veto power.



CENTRALIZED MAYOR-COUNCIL PLAN

Administrative services are organized into five or more departments, each headed by a director appointed by, and responsible to, the mayor.

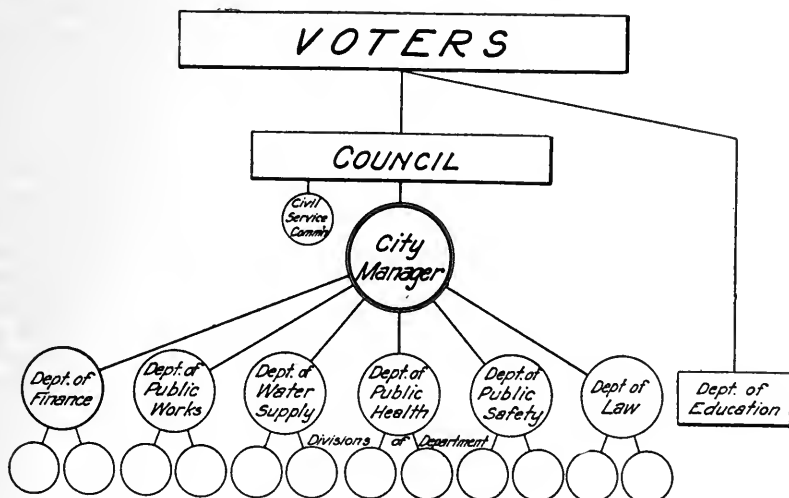
The rank and file of city employees are usually under civil service.

Arguments Pro.—The chief executive is elected by the people directly. He is given full control over administration. The people look to him as the leader whom they can hold responsible for poor work in any department. There is separation between the administrative and legislative departments. Because of the short ballot the people are able to know well

the candidates for council for whom they vote. The mayor cannot "pass the buck," because he has been given power sufficient to perform his promises.

Arguments Contra.—The mayor is usually a politician elected because of personal popularity or because he stands for certain general policies or plans of public improvements. He is rarely a good administrator of the details of city business, which deserve the full-time attention of a high-caliber executive, whereas the average mayor has to spend much of his time in taking care of his political interests.

The mayor (and this is truer of the so-called



CITY MANAGER PLAN

independent mayor than the one who is more of a politician) comes to his work without preparation or experience in the highly specialized work of the city. He is an amateur at the head of a big business. As soon as he learns the ropes, his term expires and a new "green-horn" is elected.

An elected mayor has to be guided by political considerations. Even the best of them have incurred campaign obligations which must be met by patronage.

The same is true of department heads who change with the mayor. The administration therefore cannot be free of politics.

4. The City Manager Plan

Description.—A small council elected by popular vote on a non-partisan ticket with functions confined to legislation. The council appoints the city manager and supervises him, instead of being active departmental executives, as under the commission form. The city manager can be removed at any time by the council. He is a full-time executive head, chosen upon the basis of experience and ability, and not because of political considerations. The work of the city is organized in departments, the heads of which are chosen by the manager. The organization is similar to that followed by successful business corporations and other associations.

Arguments Pro.—The manager is appointed, not elected. High-grade administrative ability is not secured by election. The public are competent to pass on personalities and policies, but do not have the time to study individual fitness for an administrative post. This is best

done by a small group who are intimately familiar with the job requirements and can study carefully the merits of each applicant.

City managership is now a profession, and each manager's success and his hope for promotion to a higher salary or a larger city depend upon his results, and not upon political favors or political service.

Most city problems relate to administration of city services, and a premium is put on efficiency, since the manager can be discharged at any time. This keeps him democratic and responsible to the council, who are in turn chosen by the people.

The manager is not an amateur. Many have been serving for years. Many have been called to better jobs as managers in larger cities on account of their reputation for service.

All city activities are coordinated to the best advantage under a central supervisor. There is no division of function or responsibility.

A small council being the only elected officials, the people can concentrate attention upon a few candidates and their fitness to frame policy, without being confused by administrative considerations as well.

Arguments Contra.—The plan is not democratic, because the manager is not elected directly by the people. He may be an out-of-town man and out of touch with local sentiment. The manager has too much authority and will "put things over" on the council, or the council will interfere too much and hamper the manager. The manager cannot engage in politics, as can the mayor, and the city is therefore without any outstanding political leadership such as a mayor gives.

Cincinnati Curtails a Needed Service

A Recent Editorial From the *Electrical World*

FINDING itself short of funds, Cincinnati has decided to curtail some of its public lighting—not that the streets of Cincinnati are the best lighted in the world or that the city is exceptionally free from crime, but because its Director of Public Service is lacking in discernment and does not appreciate just what benefits proper street lighting bestows on a community. When electricity was first used for street lighting its fitness for the purpose was instantly recognized. Among those most outspoken in their praises were directors of public safety and police commissioners, who saw in the new light a deterrent to crime. So great was appreciation that it became quite common to say, "An arc lamp is equal to a policeman."

Considering the wide difference between

the cost of the lamp and the cost of the policeman, the constant service of the one compared with the other, and the fact that street lighting is the only public service which benefits every man, woman and child in the community, the wonder is that appropriations for street lighting are not twice as large as they are. Certainly no city is overlighted; none, in fact, is even adequately lighted, and for a city of the size and importance of Cincinnati deliberately to weaken its safety and protective measures is shortsighted and blameworthy. It indicates a lack of enterprise which one would not expect in the stanch old city, whose name recalls both Revolutionary and Roman history, and which was a flourishing town when Cleveland was a hamlet and Chicago still unborn.

The Collection and Disposal of Municipal Waste

Abstracts From a Preliminary Study of Conditions in Portland, Ore., Made by a Committee of the City Club of Portland

THE problem of garbage disposal in Portland, Ore., is immediately pressing. The present incineration unit is insufficient to care for the average daily receipts during the summer months. As a result, the city is forced to dispose of a large amount of mixed waste by dumping in a manner so unsightly and unsanitary that any private concern doing the same thing would be liable to prosecution for maintaining a nuisance. The Committee points out that the undesirable conditions which they criticise are the results of the rapid increase in the amount of refuse to be handled, together with the continuance of an out-grown method of collection, and that the criticisms do not reflect upon the city authorities.

Collection in Portland

The method of collection of municipal waste at present employed in Portland is a form of the scavenger system which may be described as collection by licensed individual contractors. Under this system, licenses are granted upon the recommendation of the superintendent of the garbage disposal plant. Applications for new licenses must be signed by three citizens. The procedure is purely formal and affords no actual control of the number of collectors operating, their character, equipment, routes, charges, etc. The superintendent states that while he might refuse to approve an application, he has never done so. The fee for such license is \$5, covering three months for one vehicle of any description.

At present there are 82 licensed collectors

delivering waste to the incinerator, and a number of so-called hog feeders who collect garbage from hotels and restaurants only. Once granted a license, the scavenger becomes a free lance who may operate in any part of the city and may charge such rates as the traffic will bear. Since there is no control of routing, there is much overlapping in the more thickly populated parts of the city and no collection at all in other sections. Lack of any information as to routes makes it impossible to estimate with

accuracy the extent of such duplications. In some cases it is known from casual observation that as many as three, four, or even five collectors operate over the same grounds.

The usual charges by the collectors are from 50 cents to \$1 per month for weekly collections. Although it would appear that the unlimited number of licenses would tend

What Are the Conditions in Your City?

The garbage collection and disposal conditions in Portland, Ore., as outlined by a Committee of the City Club of Portland in this article, are regretably not confined to that one city. There are many other cities in the United States where a lack of foresight and proper planning has resulted in the overloading of present disposal plants. Study your collection and disposal problem now and be prepared for improvements and expansions before the problem becomes too serious.

to make this highly competitive and hence tend to regulate prices, this is offset by the existence of a strong union, including about 50 per cent of the collectors. The equipment of collectors is nearly all motorized and includes trucks of all sorts and sizes. The value of such equipment is undoubtedly above \$200,000. This capital investment is larger than would be necessary if it were not for the extensive overlapping of routes. The sale of equipment and routes is a well-recognized business. The average price varies from \$3,000 to \$3,500, or even \$4,000, depending upon the value of the equipment and the number of patrons on the route.

No information is available as to the aggregate cost to householders under this system of collection. No reports are made

to the city, and such information as the superintendent possesses is obtained by indirect questioning and piecing together casual remarks. Perhaps the best indication of the income from any route is in the selling price of the route. It appears that this price is about ten times the normal collection from patrons. Thus, a route which sells for \$3,500 may be estimated to afford a monthly income of \$350.

The Present Method of Garbage Disposal in Portland

A combination of hog feeding, dumping and incineration is the present method by which Portland disposes of its municipal waste. Special licensed collectors contract with the larger hotels and restaurants for the removal of such portions of table and kitchen refuse as are of value for hog feed, and haul the garbage thus obtained outside the city to feeding ranches which are wholly beyond the control of the sanitary forces of the city. Collectors pay the hotels for their garbage when the price of pork is high, as it has been for some years past. Because of this source of revenue, hotel managers have formed in the past one of the strongest centers of opposition to proposals for municipal collection. It is worthy of note that in Seattle it is held that all such refuse is the property of the city, and it is collected and sold to hog feeders under the control of the city.

The principal dump in use by the city for the disposal of refuse is near the incinerator, where a good-sized lake is being filled. About 20 acres are in use or are available, of which 5 acres are owned by the city. The dump is unfenced and is at times a hunting ground for scavengers and small boys. At the present time much rubbish and a considerable quantity of garbage are being dumped because of a lack of incinerator capacity. This creates an obnoxious condition.

Inflammable rubbish is burned in the open, and as it is often mixed with garbage, offensive odors are created. The decaying garbage is not covered and the water of the lake into which the base of the dump extends is exceedingly foul. The whole place swarms with flies in the summer and is alive with cockroaches. It should be understood that these are conditions arising from the insufficient capacity of the incinerator and that the city authorities are

responsible only in so far as they may have failed to exercise the proper amount of foresight and efficiency in providing for the increase in the quantity of refuse to be treated. In condemning most strongly the conditions existing at this dump, the Committee does not intend to express or imply any criticism of the city authorities or of the plant superintendent, but emphasizes the pressing nature of the garbage disposal problem now existing.

Somewhat similar conditions exist in other dumps within the city, and in one dump located near a thickly populated section of the city, the unsanitary and unpleasant conditions have aroused the neighborhood.

The Incinerating Plant

The municipally owned incinerator for the city of Portland is located on the west side of the city, in North Portland. It is a two-story brick building 80 by 90 feet in dimensions, and was constructed in 1910 at a cost of \$99,900. Combustible material, including all garbage except that collected by the hog feeders, is hauled by the licensed scavengers to the incinerator. Although the daily capacity of the incinerator is only 150 tons, in August, 1922, 170 tons of material per day were received. Of this 170 tons, the superintendent estimated that 120 tons were wet garbage, half of which, if properly segregated, could be used for hog feed.

The amount of waste to be incinerated is rapidly increasing on account of the increased population and of the increased collection area, which follows hard-surfaced roads. It is estimated that the paving program now being carried out in the southeastern part of the city will increase the quantity of waste hauled to the incinerator by from 5 to 10 tons daily. The city engineer's office has already asked for bids for the construction of a new incinerator to give a total capacity of not less than 200 tons daily.

The present incineration plant itself, although of an early type, is efficient when viewed merely as a disposal plant, and its operation is sanitary and without objectionable features. Refuse is delivered to the second floor by the trucks, which enter by an inclined driveway. The refuse is discharged directly into the furnaces, which are of the Fred P. Smith type, constructed

in two banks of four units each. The refuse falls directly upon the grate, and the combustible material present is sufficient to burn the garbage without additional fuel. Tin cans present in the waste are useful, since they prevent too close packing of the charge. After discharging their loads, the trucks are washed with cold water. Hot water was formerly used, but was abandoned because of the danger to workmen.

The residue left after burning, composed mostly of oxidized tin cans, is spread on the dumps. The quantity of ashes being hauled to the city dump, outside that derived from the incinerator, is large, and increasing rapidly. On the ash dump it is now necessary to employ two or three men continually where five years ago one man on part time was sufficient. This is partly due to the increased amount of collection and to the increased use of coal for heating. When not collected by licensed scavengers, ashes, bottles, cans, etc., are likely to be dumped on vacant lots and along the highways. This is one of the worst features

of the lack of city-wide collection. It is worth noting that the scavengers' union assists materially in the prevention of promiscuous dumping.

The grounds to the west and south of the incinerator plant, formerly a part of the original dump, have been developed into a small park or garden which would be a credit to any neighborhood and shows the possibility of developing filled-in land.

The type of furnace in this incinerator is not adapted for the generation of steam, hence there are no by-products. The problem at present before the city concerns the best methods by which an increase in incinerator capacity could be provided.

The additional capacity required may be obtained by:

1. Repairing and remodeling the present plant, with necessary additions.
2. Replacing the present furnaces with those of a more modern type having a capacity of at least 200 tons daily.
3. Constructing a new plant in some location which will reduce the expense of hauling waste.

Repaving with Granulated Slag and Brick

By Charles F. Sperling

Borough Engineer, Wilkinsburg, Pa.

THE streets of Wilkinsburg, Pa., were originally paved with 4-inch brick on an 8-inch gravel base with a 1-inch sand cushion and sand filler. Most of these have settled about 3 inches, so, in repaving, we take up the old surface, scrape up the loose sand and gravel, and then thoroughly roll the subbase. Granulated slag obtained from the Carnegie Steel Company at a cost of \$2.50 per car-load plus freight charge is then spread over the base. The granulated slag sand is thoroughly wet down and rolled with a 5-ton tandem roller. It is then brought to the required grade with about 1½ inches of granulated slag. Dunn re-pressed lug

block brick are then laid, over which we place asphalt according to the specifications of the National Paving Brick Manufacturers Association. About 2 gallons of asphalt per square yard are required to cover the entire surface, after which a layer of river sand is spread over the asphalt and rolled. The street is then ready for the regular city traffic without any delay.

The granulated slag sets as hard and seems as durable as concrete after about six months. The Lincoln Highway, where it passes through the borough, has been repaved by this method and has stood up very well.

PRESERVE THE DESIRABLE TREES AND SHRUBS

A few years ago there was a tendency to cut all trees and young shrubs from the roadside, and this tendency is still noticeable in some localities. Those same roadsides, made barren through wholesale clearing, are now being considered for planting. How much more reasonable it is to cut only the undesirable growth and to preserve the desirable trees, shrubs and vines, thereby saving expense, labor and years of waiting, besides producing roadsides more attractive than those planted by man.

—Charles F. Boehler, *Landscape Engineer, Michigan State Highway Department.*

Savings Effected Through Improving Road Surfaces

What Does It Cost to Haul Over the Road?

IOWA STATE COLLEGE and other colleges and institutions have been making a test to determine the comparative tractive resistance of various types of road surfacing. Special instruments are designed to carefully and accurately test the pull required and the fuel consumed per ton-mile, the accepted unit of highway traffic. Tractive resistance test figures indicate that the average mile-age per gallon per ton-mile is as follows:

| | |
|-----------------------|--------------|
| On earth road..... | 14 ton-miles |
| On gravel road..... | 21 ton-miles |
| On concrete road..... | 31 ton-miles |

At 24 cents per gallon, fuel costs per ton-mile on these average as follows:

| | |
|-----------------------|------------|
| On earth road..... | 1.71 cents |
| On gravel road..... | 1.15 cents |
| On concrete road..... | 0.77 cents |

The good roads department of Iowa State College working with the State Highway Commission in 1917-1918 established weighing stations on important roads together with a careful count of numbers and types of vehicles. Each vehicle was accurately weighed. The average weight for each general type of vehicle has been found as follows:

| | |
|----------------------------|--------------|
| Horse-drawn passengers.... | 671 pounds |
| Horse-drawn freights..... | 1,998 pounds |
| Passenger automobiles..... | 2,691 pounds |
| Motor-driven freight..... | 2,720 pounds |

Applying these weights to various types of vehicles using a given road gives the daily average tonnage; then applying to this tonnage the cost of gasoline consumed per ton-mile on this particular type of surface, should give data from which to determine whether or not it is economical to pave any particular road.

Take as a specific example the Lincoln

Highway of Ames, Iowa, a gravel-surfaced road. The traffic census count shows a daily average of 904 vehicles. The daily average tonnage shows 1,232 tons. Test data show that the cost per ton-mile of fuel, on gravel, is 1.15 cents, and 0.77 cents for fuel on concrete road. If this road were paved, there would be a possible saving of 0.38 cents per ton-mile in fuel consumed. This saving applied to 1,232 tons of average daily traffic gives an average daily saving of \$4.78 per mile of road. The daily saving amounts to \$1,746 per mile per year.

The average cost of maintaining gravel roads in the primary road system in Story County, Iowa, in 1921 was \$803 per mile. The average cost of maintaining the concrete pavement was \$89 per mile. The saving in maintenance of concrete over gravel would therefore be \$714 per mile. Add to this the \$1,746 saved on fuel, and it would make an annual saving on concrete of \$2,460 per mile per year.

Concrete paving prices during 1922 have been averaging on contracts for 125 miles of 18-foot pavement approximately \$26,400 per mile. Interest per year on this amount at 5 per cent would amount to \$1,320 per mile for the first year, but paying for the road through a term of years the interest would be figured at one-half this amount, or \$660. Deduct the interest charge of \$660 from the \$2,460 saving on maintenance and fuel, and this leaves an average saving of \$1,800 per mile per year. Applying this figure on the cost of the road shows a saving that would pay for the road in 15 years.

Aid the Motor Truck to Become Increasingly Efficient

The service rendered by a motor truck can be no better than the roads over which it runs, nor the traffic conditions under which it operates. The cost of trucking depends on time, not distance. Very little has been done to speed up truck movements. Our highway systems are seldom properly laid out and never properly operated. Our city streets are worse. As a result, trucks are delayed. . . . It makes the cost of living higher for everyone. We must urge on the use of the motor truck and furnish it with facilities in the shape of roads and streets and sensible traffic regulations so it can best "do its bit."

—MAJOR ELIHU CHURCH.

Lighting an Avenue of Christmas Trees

New Highway Lighting Units Solve Unique Problem

WHEN the lights of the new street lighting equipment in Altadena, Calif., were turned on, the latter part of December, a very interesting installation began operation.

The lighting problem presented was unusual. Altadena is a suburb of Pasadena, situated at the base of the Sierra Madre mountains. The district comprises about 4 square miles and consists of country estates. The thoroughfares are in reality highways rather than streets in the ordinary sense of the latter term. Such being the case, the residents, while desiring the illumination of these thoroughfares, did not want ordinary street lighting units employed.

A trial installation of G-E Novalux highway lighting units was therefore made along Santa Rosa Road, famous throughout that section of California for the fact that the residents string thousands of little electric lamps among the branches of the cedar trees lining it, at Christmas time, thus converting the road into a veritable Christmas tree avenue. This road is somewhat more than a mile long and has an incline of about six degrees. The foliage of the trees is very dense and the branches almost touch as they arch over the roadway.

The lighting units were placed 28 feet above the road and 540 feet apart. Poles in front of the homes fronting the road were deemed objectionable, and heavy cables stretching across it were in disfavor. The adaptability of the unit chosen made it suitable to these conditions, and they were suspended in a center span arrangement from inconspicuous wires strung high overhead.

So successful was this installation that a lighting district was established covering about 4 square miles and containing a road



HIGHWAY LIGHTING ON "CHRISTMAS TREE AVENUE," KNOWN AS SANTA ROSA ROAD, ALTADENA, CALIF.

mileage of approximately 30 miles, most of which is to be thus illuminated, a total of 270 lighting units being used. The petition creating the lighting district was approved by the County Supervisors, and at a subsequent election the necessary bond issue to finance the improvement was voted.

Safety Through Street Illumination

Investigation has shown that over 17 per cent of night traffic accidents are attributable to a lack of adequate street illumination.

Operation of the High-Pressure Fire System in Baltimore

By P. W. Wilkinson

Secretary, Board of Fire Commissioners, Baltimore, Md.

ONE of the most necessary elements of success in putting out large fires is a large stream of water that can be thrown a considerable distance. The pressure in many cities is not sufficient to furnish this, but in Baltimore a high-pressure system has been put in operation which has been giving for several years complete and satisfactory proof that it can furnish the protection needed. This pressure service possesses certain features that are unique.

The pipe is all lap-welded soft open-hearth steel. This enabled the strength to be determined; and as all joints are universal, designed without gaskets, this takes care of stresses caused by temperature changes, settlement or other disturbing features, without the use of expansion joints. It also makes it possible for other underground pipes to be crossed or passed with greatest facility. The metal-to-metal connections eliminate electrolysis, thus reducing corrosion and leakage to a minimum.

The hydrants are simply designed, so that they are really only vertical pipe connections on the mains, having a valve at the lower end opening against the pressure, and the upper end fitted to receive the hydrant head, which is portable and carried on the fire department hose trucks.

The hydrant heads are novel in that they are attached to the hydrant by a very small turn and locked by the pressure of the flow into the head. The four side hose openings for 2½-inch outlets are each equipped with a special regulating valve by which any pressure from zero to a maximum of 250 pounds may be delivered entirely independently of any signaling to the high-pressure pumping station, and are under the absolute control of the chief in charge at the fire. On top of each head is also an opening for a 3-inch turret or Monitor nozzle. This type of portable head with connections to hydrant renders it possible to have streams flowing inside of 20 seconds after arrival at the plug.

The special head is also fitted for a Morse Jumbo nozzle, having tips ranging from 2½ to 4 inches with a discharge capacity of 7,000 gallons per minute. These can be used for the heaviest fire duty, and the direction of the stream can be fixed so as to remain constant without attention.

The High-Pressure Pumping Station

All equipment in the pumping station, as with every other part of the system, was designed for absolute reliability. As such a station works a very limited number of hours during a year, it is not necessary to consider economy at the expense of reliability and efficiency, either in the type of machinery or the operating methods. It was this consideration which decided the use of twin-cylinder, non-condensing engines and the type of pump with all packing outside and no valves to clog. There is also a small pump, used to maintain a constant pressure on the mains. On the discharge pipe from each pump there is a regulating valve which is connected to the steam main of each engine, and in this way the speed of the engine is absolutely controlled by the flow of the pump. This valve also automatically controls every other element of the station, such as blowers, water feed, delivery of fuel and operation of the stokers. This intimate and positive relation of all parts of the system and the maintenance of constant pressure on the mains permit the companies at the fire to operate to the best advantage without telephoning or otherwise signaling instructions to the station. This automatic engine control also permits streams to be drawn or stopped instantly if need be, with no resulting injury to the station equipment from water hammer. This really results in placing every detail of the entire system directly under the personal control of the officer in charge at the fire, insuring the highest efficiency with the greatest safety to the men.



3-INCH TURRET NOZZLE OPERATING FROM THE TOP OF A HIGH-PRESSURE SERVICE HYDRANT, BALTIMORE, MD.

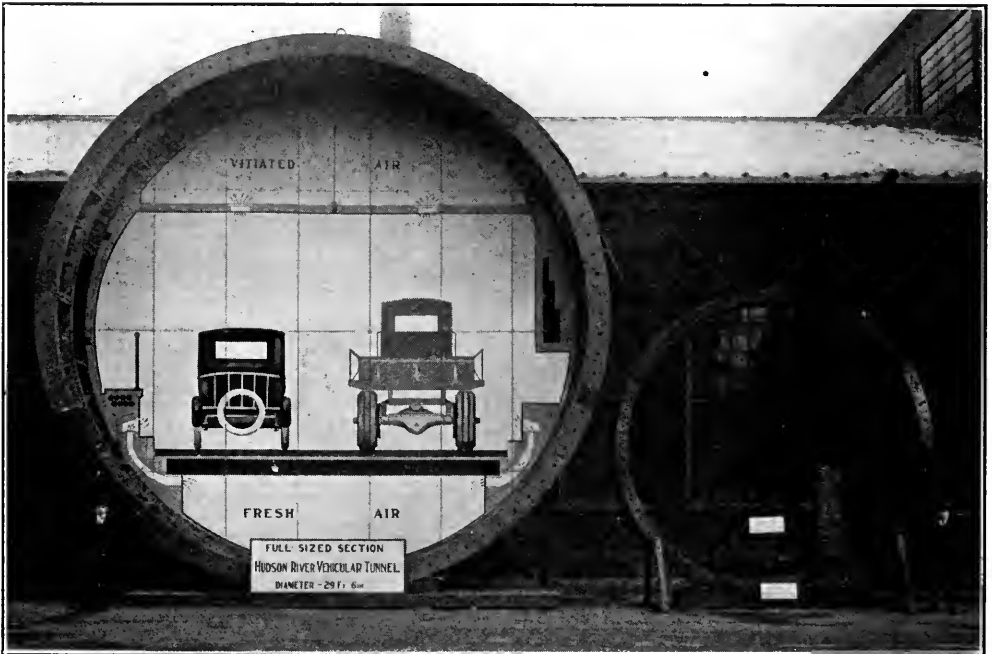
The system was installed under the direction of the late D. B. Banks, a consulting engineer of Baltimore. It has been in operation for ten years, during which time there has never been a single hitch

in any part of the equipment under any circumstances, nor has the ten years of use suggested any change or modification in a single feature. The cost of the construction and equipment was as follows:

| | | |
|--|--------------|---------------------|
| Appropriation | | \$935,777.41 |
| Pipe line: | | |
| Construction | \$529,848.87 | |
| Paving streets | 10,084.32 | |
| Water Department connection | 1,471.22 | |
| Hydrant heads | 5,775.00 | |
| Tools | 848.24 | |
| Advertisements and blue-prints | 164.95 | |
| | | \$548,192.60 |
| Pumps | \$66,474.50 | |
| Interest charges | 1,848.50 | |
| | | 68,323.00 |
| Boilers | \$44,192.60 | |
| Interest charges | 760.77 | |
| | | 44,953.37 |
| Boilers and pumps: | | |
| Piping | | 36,255.66 |
| Pumping station: | | |
| Ground | \$32,633.40 | |
| Building | 152,091.06 | |
| Test holes | 5,501.08 | |
| Water Department connection | 135.66 | |
| Advertisements, specifications and blue-prints | 401.78 | |
| Miscellaneous | 477.98 | |
| | | 191,240.96 |
| Engineering | | 42,020.82 |
| Fire alarm service | | 4,791.00 |
| | | \$935,777.41 |

Comparative Tunnel Sections

An Example of the Advance in the Science of Tunnel Construction



A full-size section of the Hudson River Vehicular Tunnel, New York-New Jersey, 29 feet 6 inches in diameter, weighing 16,630 pounds per linear foot of ring, and a full-size section of the Hudson & Manhattan Railroad tunnels under the Hudson River, 16 feet 7 inches in diameter, cast in 1902, weighing 5,670 pounds per linear foot. These sections were set up by the Bethlehem Steel Company in its yard at the time of the visit of the American Society of Civil Engineers, January 18, 1923

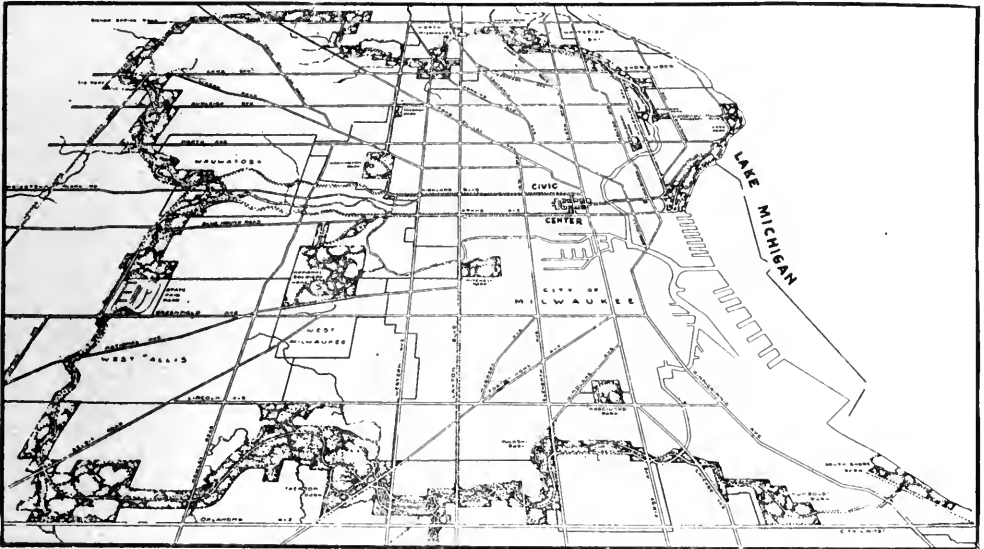
Forward Steps in City and County

The Milwaukee County Highway and Park Plan

MILWAUKEE, WIS.—The proposed parkway shown in the accompanying plan is in a measure a conservation scheme. The greater portion of the land designated to be taken as a parkway is a watershed for one of the many streams in the country immediately surrounding the city. Most of this land is not available, or at least not altogether desirable, for residential areas. As the city increases in size, these watersheds will eventually lie within the city limits and the problem of draining the surface waters will be a serious one. Considerable money would then be required for the building of adequate sewers, and it is the belief of the Board of Public Land Commissioners that considerable money may be saved by purchasing these water-

sheds at a comparatively nominal price at this time instead of building sewers later on. Such parkways will also form a base, as it were, for future residential areas, so that many of the newer home districts will be in close proximity to the park system.

In connection with this parkway scheme, we are making another experiment in an effort to induce a large number of property owners holding contiguous properties to pool their interests as to platting. The platting of small areas makes it impossible to conserve the beauty now obtaining. Small areas prompt the continuation of a gridiron system of streets, the leveling off of every hillock, and the ruining of other advantages which nature gave the owner for nothing. Owners of property comprising several thousand acres have already agreed to so pool their interests under the



MILWAUKEE COUNTY HIGHWAY AND PARK PLAN

This plan represents the combined efforts of the County Park Commission and of the Board of Public Land Commissioners of the city of Milwaukee, endorsed by the City Planning and County Affairs Committees of the Milwaukee Association of Commerce. The arteries of travel leading from the city are to be made of ample width to facilitate the spreading out of the residential areas

plan prepared and to employ a first-class landscape architect to lay out the section with a view to conserving the natural beauty of the district.

WM. H. SCHUCHARDT,
President, Board of Public Land Commissioners.

Municipal Milk Stations

RAHWAY, N. J.—In the city of Rahway milk is now regarded as a public utility. Acting upon this theory, Mayor James B. Furber last summer appointed a milk commission to investigate what could be done by the municipality to reduce the high price of milk. After a careful study of the situation, the commission recommended the establishment of municipal milk stations. These are now in operation, to the number of eight. The price of grade A milk at the stations is 12 cents, whereas the price charged by private concerns is 18 cents and in some cases 19 cents. A large number of private concerns have been compelled to drop their prices in order to meet municipal competition.

In arriving at the municipal station idea, the Commission studied both cooperation and the possibility of persuading the private milk distributors to introduce more efficient methods of distribution. It was found, however, that the former method would require a long educational campaign and would therefore not meet the acute situation, while the latter method could only be brought about by forcing the dealers to such steps through competition.

The municipal stations were installed in private stores. This obviated the necessity of a large overhead, and also assured clean handling of the milk. The best stores in the city were chosen for this purpose and with a particular view to their location near the homes of the consumers. The consumers get the milk in bulk and on a cash-and-carry basis.

Contracts have been signed with three dealers covering a period of a year, and assure the city of an unlimited supply of milk. Over 1,800 quarts are sold each week at the municipal stations during these winter months. In the summer, of course, the demand will increase greatly. The producer has received a benefit from the municipal contract in that his price is standardized throughout the year. The city pays the same price per quart to the farmer winter and summer. Its price to the consumer likewise remains unchanged.

All classes of the community have joined in patronizing the municipal stations. All agree, also, that the stations have been carried on efficiently and have been a decided success. The Commission from the beginning made it plain, in its reports, that the success of the project depended not upon itself, but upon the cooperation of the people. The members of the Commission are two women and two men. Mayor Furber—who has also initiated a number of other municipal projects, such as municipal sale of potatoes, coal, etc.—is a Socialist. Of the numerous reforms introduced by him during his ten months of office, the municipal milk stations have attracted the most attention. With the signing of the contracts with the producers in December, these stations were put on a permanent basis.

LOUIS F. BUDENZ,
Secretary, Rahway Milk Commission.

An Unusual Small-Town Swimming Pool

PENDLETON, IND.—It is said that the early citizens of Pendleton were attracted to build their log cabins there by the beauty of the falls of a creek which passes the town. But along came the ravages of man, and the primeval beauty of the tract surrounding these falls was marred by an old abandoned railroad fill, an unsightly rock quarry which had long been left desolate, and the unkempt surroundings in general.

The town, now a community of 1,500, gained possession of the tract and started to restore the former beauty as nearly as possible. A municipal park of five acres, within one block of the business district, was built surrounding the falls, and a dam was placed just below the falls, making a beautiful swimming pool from one to twelve feet deep, which fills with fresh water every twelve minutes. The bottom is of fine sand, and the water as clear as crystal. This is recognized as one of the best pools in the state, and is patronized by people from cities and towns as far as twenty miles away. It cost \$3,000. By a 10-cent admission charge for persons from out of town, the pool has paid for itself the first year. It is equipped with overhead electric lights and has two neatly finished bath-houses. One thousand dollars' worth of playground equipment has been erected in the park.

The old rock quarry has been trans-



THE SWIMMING POOL IN PENDLETON, IND.

formed into a picturesque fish lake about one acre in extent, and is stocked with fish. A small cement flume carries a continuous stream of fresh water from the creek above the falls into this lake, and sharp projecting snags have been left in the bottom, thus preventing the seining of the lake for years to come.

In the park there is a free tourist camp, equipped with free gas for cooking, electric lights and running water.

D. B. COLE,
President, Pendleton Park Board.

A Ten-Months Report

Instead of publishing a general report for the full calendar year, the city of Regina, Sask., issues a report for the first ten months of the year, thus giving the citizens as full information as possible about their affairs before they record at the polls their policies for the future. There is a general meeting of the citizens on the last Monday in November to discuss the reports on civic affairs; nominations are made on the first Monday in December; the municipal elections are held on the second Monday in December. A detailed financial statement is published at the end of the year, supplementing the general information already issued.

The Tulip on Parade

BELLINGHAM, WASH.—The annual Tulip Festival of Bellingham will be held from May 10 to 12, when the tulips are in the full beauty of their bloom. Its principal feature is a parade with many floats and decorated automobiles, all showing the tulip in its glory. The undertaking is managed by the Tulip Festival Association, a regularly organized body with the usual officers and an attorney, besides a cabinet of committee chairmen in charge of the Bulb Propagation and Blossom Show, parades, concessions and entertainment, out-of-town activities, publicity, finance, and Queen's affairs and coronation. The Festival is a matter of great civic pride and has the cooperation of the Board of Education and the Superintendent of Schools.

There will be more than 5,000 school children in the parade, with probably from 100 to 125 floats and competing decorated automobiles. The costuming of the children produces a wonderfully beautiful effect, and, as is always the case where children have a part in any public undertaking, greatly increases the enthusiasm of the grown people. Last year the parade was



WASHINGTON SCHOOL FLOAT, WHICH WON FIRST PRIZE IN THE BELLINGHAM, WASH., TULIP PARADE, 1922

over a mile long and took one hour to pass a given point. Moving pictures of it were widely distributed and thus extended the number of spectators of this event.

The good will and enthusiasm of the neighboring cities of British Columbia—Vancouver, Victoria and Nanaimo—have been enlisted, and it is expected that these places will send a delegation of 5,000 persons. A ferry is being built by the Canadian Pacific Railway Company to ply between Victoria and Bellingham, making two round trips each day, beginning about the time of the Festival. The boat will carry from 50 to 75 autos and seat 1,000 persons. The route goes through the beautiful San Juan Archipelago—a famous trip for tourists.

One of the great sights during the time of the Festival is the experimental bulb-

growing station maintained by the United States Bureau of Plant Industry, where about thirty acres are planted with tulips, narcissi, daffodils, and jonquils. It is visited by people from all over the world and is intended to show that this particular section of Uncle Sam's domain can help to keep in this country the several millions of dollars that now go to foreign bulb growers.

On the Saturday night which closes the Festival there will be an impressive electrical display which will be worth coming a long distance to see. Bellingham affords the visitor a wonderful combination of the beauties of nature in this tulip show and in the proximity of the virgin forest of Mt. Baker National Park, reached over a paved road of 45 miles.

• CHAS. A. McLENNAN,
In charge of Out-of-Town Activities, Tulip
Festival Association.



THE QUEEN'S CAR IN THE TULIP PARADE, BELLINGHAM

Relative Values in Public Health Engineering

By M. N. Baker

Associate Editor, *Engineering News-Record*, New York; formerly
President, Board of Health, Montclair, N. J.

ENGINEERING is the art and science of planning and doing a given task as well as it needs to be done at the least cost consistent with that end.

This definition of engineering may perhaps aid in making plain my conception of a principle which should guide public health work.

Such a definition involves a clear idea of the aims of every endeavor, the best but least costly means of attaining those ends, and the faculty of discerning the point of diminishing returns. The latter is of great importance in view of the vast amount of engineering work still undone that must await doing because of lack of money. In every city there are numerous public improvements and public services constantly making their demand upon the municipal treasury. If each demand were satisfied idealistically, the total cost would bankrupt the city and the taxpayer alike. Each improvement or service must therefore be considered in the light of its relative importance and take its place accordingly in a far-looking municipal program.

Public funds being limited, so must be the pursuit of the ideal in each branch of public-health work, in order to achieve the largest possible total gain in the saving of lives and sickness. The highest ideals in water-supply, for instance, should be postponed when additional expense for further improvement will have no probable measurable effect on typhoid or the general death-rate and while there is every reason to believe that the money needed to make the water-supply ideal would, if expended on the milk supply, effect a notable reduction in tuberculosis and infant mortality. A more striking illustration would be the concentration of health department effort on garbage disposal, as is so often the case, while no really efficient work is being done to control communicable diseases or reduce infant mortality.

Among all the engineering works that have contributed to the reduction of sickness and death and the accompanying suffering and heartbreaks, probably none equals public water-supplies—at least not on the North American continent. Probably sewerage systems come next, but if so, then it is the quick removal of human excreta from our houses and yards and streets rather than its final disposal that deserves the credit. Plumbing, except as means for distributing water to points of use and removing it after it has been soiled, seems to have but a minor relation to health. Garbage collection is more a branch of municipal cleansing or housekeeping than of health, except where garbage uncollected attracts flies that have access to privies, or rats that may spread plague. The final disposal of garbage is still less a health matter. The character of paving and of street cleansing, it seems to me, has far more bearing upon public health than has garbage collection or disposal. Where mosquitoes and malaria or yellow fever prevail, engineering works in the nature of land drainage are generally the best and cheapest means of control.

House and building design and construction, with particular reference to air, warmth and light, dryness, the saving of labor for housewives, and general convenience, play their part in public health. Heretofore, these things have been regarded as the function of the architect, but for years now we have had heating and ventilating engineers, while in various ways the engineer is becoming more and more concerned with the construction of houses and other buildings. From the engineer we may expect a reduction in the cost of housing that can come only from the introduction of labor and material-saving through systemization, quantity production and like engineering methods. With a reduction in the cost of shelter may be expected a relief from the overcrowding

and other evils that undermine health and spread disease. Housing in its broader aspects is a part of the new science of city planning, including zoning, which after so many long years of neglect is now beginning to receive some part of the attention which it so richly deserves.

I believe it is to city planning and its results that we must look for much of the future improvement in public health and particularly for a further reduction in the general death-rate in so far as these depend upon engineering work; a reduction traceable not so much to any one readily specified measure as to improvement in many interrelated causes that go to make up community convenience, comfort and mental and physical health.

More Knowledge and Better Health Index Needed

With a general city death-rate at or near 10 per 100,000; with a typhoid death-rate down to 5, 3 and even 2 or less per 100,000; with infant mortality in progressive communities well below 100 and running on down to 50 or less under well-controlled conditions; and with other elements tending to change what has been called the health yardstick to a foot rule, the public health official, and particularly the engineer, needs more knowledge than now exists of what has caused these marvelous declines in mortality and morbidity rates in the past and, of greater importance, what further declines he may expect and by what means they may be accomplished.

This knowledge is needed by the engineer in particular because it is his habit and peculiarly his function to measure the worth-whileness of proposed works and services in terms of costs and of results. Is the game worth the candle? Can the desired end be better and less expensively achieved by some other means? Would the same expenditure for some other purpose save more lives or bring more health?

For many years past the engineer measured the results of his efforts in the sanitary field by the typhoid death-rate. At least, this was true as regards water-supply, the improvement of which in the past is believed to have been the most potent engineering factor in reducing the typhoid and the general death-rate.

At the present moment, the water-supply engineer is often in a quandary as to how much additional expenditure he is war-

ranted in recommending for one supply instead of another on the possible chance that a few thousand or hundred thousand or millions of dollars—according to the size of the city—thus spent will provide water that will lessen by a shade a typhoid rate almost at the vanishing point or perchance in some way which no one can clearly and positively define reduce some other human ill. The engineer, the health officer, the city councilman and the taxpayer, each and all, need a more delicate and certain index than is available, now that typhoid has been reduced to so low a figure, of the causes of the past decline in typhoid and the probable cause of future decline. Have the engineer and the health officer come to the bottom of the curve so far as efforts against typhoid in many of our cities are concerned? Can the experts hereafter merely hold what they have already gained? If further reduction may be expected, and typhoid wholly eliminated, then by what means? Would the same, or perchance much less expenditure, capital and operating, reduce by 2 or by 5 per 100,000 the death-rate from some of the causes other than typhoid as against $\frac{1}{2}$ or $\frac{1}{10}$ of 1 on the typhoid scale? Similar questions are pertinent as to larger expenditures for sewage treatment than are considered wise by most sewage-works engineers.

Before these questions can be answered, we need what in a recent editorial discussion in *Engineering News-Record* (November 9, 1922, p. 776) was termed an intensive-extensive study of the causes of typhoid fever; a study that would take into account, chronologically, the volume and the efficiency of the several lines of work that have combined to reduce typhoid fever—such as water-supply protection, filtration and chlorination; milk ordinances, inspection and pasteurization; contact control in its many phases; better medical and nursing care; anti-typhoid inoculation. The same kind of study is needed of other causes of death and related or possibly related public-health work.

Here is a great field for the public health officer and the sanitary engineer. Particularly will it repay the earnest and skilful cultivation of the students of hygiene and public health who are soon to be the leaders among the health officers of America.

ACKNOWLEDGMENT.—From an address before the Sanitary Section, Boston Society of Civil Engineers, March 7, 1923.

Choosing a Health Bureau Chief in Philadelphia and a Building Inspector in Richmond

PHILADELPHIA, PA.—The appointment of Dr. James G. Cummings as Chief of the Health Bureau of Philadelphia is the result of an open competitive examination conducted by the Philadelphia Civil Service Commission. To show the sort of man the new Chief is and what sort of men a properly conducted Civil Service examination will produce, it is interesting to know that Dr. Cummings was Director of Pasteur Institute, University of Michigan, and Assistant in Hygiene and Physiological Chemistry, 1907 to 1915; Director, Bureau of Communicable Diseases, California State Board of Health, 1916 to 1917; Captain, Major and Lieutenant-Colonel in the Medical Corps, U. S. Army, between June, 1917, and June, 1918; and Assistant Health Officer, Washington, D. C., March 1, 1922, to date of assuming his new duties in Philadelphia.

The position of Chief of the Bureau of Health is the main administrative office of the Department of Health and is under the direct supervision of the Director. The incumbent is responsible for disease prevention and sanitary engineering in the entire service, and upon him rests the health of the whole community. A direct measure of his efficiency is told in the death-rate of the city.

When this position was vacated by John A. Vogelson, Chief Examiner Shaughnessy of the Civil Service Commission made a very careful study of the duties and requirements of the position, preparatory to scheduling a competitive examination for the vacancy. The outstanding feature of the case was the low salary, \$4,000 plus 5 per cent bonus. It was a very grave question as to whether any man with the requisite qualifications would be attracted to it.

It was decided to use the non-assembled type of examination, waiving all questions as to residence. It was further decided to advertise extensively in the institutions and health departments of the country. The plan of the examination included:

1. A complete statement of training and experience; achievements in public health work, professional connections, and papers prepared

or published which show administrative ability in this line of work. A weight of 45 per cent of the examination was given to this subject.

2. A professional paper calling for original and constructive thought on a modern health bureau, its personnel organization and the division of its activities, including the coordination of the non-official health organizations of the community. This subject was given a weight of 30 per cent in the examination.

3. An oral interview before the board of examiners. This part of the examination was designed to get at the man's executive ability and judgment in dealing with and managing a large organization. His ideas on public health administration and his manner and force were factors here considered. A weight of 25 per cent was given to this subject.

There were eight candidates, and five of these qualified by experience and were called to the oral interview. As was to be expected, the field of competition was rather narrow, because of the low salary. Notwithstanding this, however, it is believed that the city has secured one of those men who prefer to do institutional or municipal work to devoting themselves to private practise. Fortunately, there seems to be an increasing number of such men, and in time their compensation will be made adequate to the work they are called upon to do. All the men who secured a place on the eligible list have had a wide range of experience in public health work and in sanitary engineering.

The board of examiners on this examination were Dr. A. C. Abbott, head of the Department of Public Hygiene, University of Pennsylvania, and formerly Chief of the Bureau of Health (the position for which this examination was held); Dr. Ralph Pemberton, a noted physician in the city of Philadelphia, and Charles S. Shaughnessy, Chief Examiner of the Civil Service Commission.

So long as Dr. Furbush remains Director of Health and so long as Dr. Cummings renders good service, there will be no thought of politics in the Health Bureau of Philadelphia, and there are not wanting those who believe that a mighty good beginning has been made.

CLINTON ROGERS WOODRUFF.

RICHMOND, VA.—Politicians, long used to the system of patronage which placed them in choice municipal offices as a reward for party affiliations and labor, have received a severe jolt, and the use of newspaper advertisements toward securing the best men obtainable for important positions in technical bureaus of city departments has been given quite a boost as a result of the method used recently for appointing a head of Richmond's Bureau of Building Inspection.

Intimations of a changing order were given first when the Richmond daily papers printed an advertisement, signed by the Director of Public Safety, calling for applications from men whose experience and other qualifications justified their consideration as head of the Bureau of Building Inspection. Requirements as to training and practise were set forth in this copy, the duties of the office were outlined, the salary was stated, and notice was given that applications would have to be filed within a week.

Colonel William M. Myers, Director of Public Safety, discovered within a few hours after the advertisements had been published that he had dropped a bombshell whose fragments were finding marks in every section of the political camp. In years past, appointments had been made largely on the basis of a reward. During more recent years this had become one of the considerations rather than the prime factor. But Colonel Myers' advertisements served notice that "reward" and "pull" were words eliminated from his dictionary and that "training," "knowledge" and "experience" were those whose meaning applicants would be compelled to appreciate. Every wile of the experienced politician was made use of in an effort to preserve the old order, but the Director stood to his guns and fired a salvo in support of his signal shot.

He called upon the Richmond Chapter of the American Society of Engineers; Allen J. Saville, Director of Public Works, and J. A. Johnston, an engineer who has specialized in building-construction work. Of each he asked that the application be reviewed, that recommendations be made as to the six men apparently best qualified for the position, and that their findings be made without conference one with the other.

As a result of the advertisements, thirty-

nine applications were received. Colonel Myers himself considered each carefully and compared merits and demerits before noting the four men whom he considered best qualified. The names of these men were known only to himself. Those asked to assist the Director with recommendations then received the applications, and their findings likewise were kept secret until all reports were in.

It then was discovered that the four men originally noted by Colonel Myers were on each of the lists. The committee acting for the American Society of Engineers made three first and three second choices in filing their report, and their three first selections proved to be three of the four men noted by the director. On that basis, these three applicants were the only ones considered in the final analysis.

Here it was that the Director experienced considerable difficulty, due to the fact that there seemed little choice among the men as to general experience and training. Everything entering into the qualifications of an applicant for an important position was considered, even to the ages of the men seeking the office. The decision finally reached caused the Director to offer the position to a man forty-four years of age, a trained engineer with administrative ability, who had had eight years' practical experience in building construction.

The most important feature associated with his appointment, certainly in so far as a changed system of filling vacancies in municipal offices is concerned, is the fact that the successful applicant won his appointment solely upon his qualifications. But one letter was received by the Director recommending him, that being merely a letter commending his character, etc., sent by a former employer. No messages advocating him were received.

While other cities have used advertisements in an effort to bring forth applicants from the nation at large for big municipal offices, this is the first time, in the Virginia section, that the method has been used for securing an official. And it is believed there have been few instances in which so great consideration has been given to detailed qualifications at the expense of political affiliations. Only from professional politicians has there come protest.

CHARLES M. MONTGOMERY.

The Value of Sedimentation in the Purification of Water at Cedar Rapids, Iowa

By C. O. Bates

Department of Chemistry, Coe College, Cedar Rapids, Iowa

A MATTER of first importance in the process of water purification in the Cedar Rapids plant has been the introduction of a settling-basin. The basin was rather hastily improvised to relieve an approaching serious condition. The demand for water has been constantly increasing, while there has been a constant deterioration of the plant common to all overworked plants. At the same time, there has been, for a third of a century, an in-

Forty-seven years ago, when the water plant was built, the water was taken from the Cedar River and pumped direct into the city mains without treatment of any kind. The city was supplied with water for about seven years by this method. Three artesian wells were then drilled and put into use, and supplied the city with water satisfactory for all except industrial purposes. This condition lasted for five years. The wells then began to fail. This, together



COVERED SETTLING-BASINS AT THE CEDAR RAPIDS, IOWA, WATER-WORKS

crease in the pollution of the river from which we get nearly all of our water. This increase of pollution is evidenced by the increase of chlorine as chlorides. Thirty years ago the chlorine was a very little more than three parts per million; to-day it is nearly five parts per million. This may be accounted for by the increase in population in the Cedar River's drainage basin, but more particularly by the greater number of homes that have made sanitary sewer connections. Industrial wastes have also added a certain amount of pollution.

with increased demand for water on account of increased growth of the city, was the cause of bringing the greater part of our water from the river.

Serious Consideration of Settling-Basins

So the question of a settling-basin has been a matter for consideration from time to time for the past thirty-five years, but there is absolutely no surface space for such a basin in the vicinity of the water plant. The difficulty has been fairly well met for the present by building a wooden structure

of a quarter-million gallons capacity 12 feet above the ground level, covering it completely and screening it at all points where the air has access. The basin was designed and constructed by Superintendent H. F. Blomquist.

It is divided into two sections, each of which is about 85 feet long and 25 feet wide, connected by a flume permitting the water to pass from one section to the other. Each section is divided into two channels. The water enters the west section on the north side from the river, passes down the channel, which is $12\frac{1}{2}$ feet wide and 8 feet deep, the entire length of the section, curves around into the channel on the south side, returns the length of the section and passes through the flume to the east section where it traverses the length of the section twice, completing in its entire circuit a distance of 170 feet and passing over five transverse baffles. The water is in the basin about one and one-half hours.

The water coming from the river receives the alum just before it enters the pump which forces it up into the basin. The journey through the pipes from the pumps to the basin is about 200 feet. On entering the basin, the water is given a whirling motion by turbine-like vanes as it is released. This whirling motion completes the thorough mixing of the alum with the water. The floc just begins to form as it enters the basin, and a visible increase is noticed throughout the entire journey in the basin, being very conspicuous where it leaves for the filters. It is, however, broken up into fine particles in passing through the pipes to the filters.

What the Basin Has Accomplished

The basin was placed in active service February 3, 1922. During the first 68 days of service, 400 tons of sediment accumulated in the bottom of the tank, approximately 300 million gallons of water having passed through the basin. This makes a 24-hour average of 6 tons of sediment retained by the basin.

The basin was thoroughly washed the 6th and 7th of May and was run for 137 days before a second cleaning out was done on September 20. During this period, a skimmer was installed in each basin, which

carries off all the sediment that rises to the surface of the water and transfers it to sewer pipes. The amount accumulated during the summer months averaged somewhat less than during the spring months. The average was $4\frac{1}{2}$ tons per 24 hours, amounting to 650 tons during the 137 days. The average during the spring and summer was a little over 5 tons per day. This has been a great relief to the filters; in fact, it would have been impossible to give the city satisfactory water during the spring and summer months of this year without this basin. After making a determination of the average sample as to total weight of sediment in both spring and summer determinations, an average sample of the sediment was reduced to a dry powder and found to be four-fifths water and one-fifth solid matter.

Our conditions would be improved, especially as to taste and odor, if we had another basin equal in size to the present one. This would help us to take care of the water during the flood season, and would also enable us to permit the water to pass more slowly through the basin and remove a larger amount of sediment. It has been our aim at all times to make safety the first principle, and we think we have fairly well accomplished that. The number of bacteria in the final effluent is reduced to a minimum of two or three bacteria per cubic centimeter. We feel sure that the quality of the water would be improved by enlarging the sedimentation basin. The question of the quality as to taste and odor is a very complicated one, involving the knowledge of the action of the chlorine on the various impurities in the water. If we take out these impurities by sedimentation basins, we shall have less trouble from taste and odor; at least that has been our observation so far.

As compared with the raw water that was used 47 years ago when the public were not critical in regard to their water-supply, great progress has certainly been made, but people have become intensely critical in regard to the quality of water that they use. It is right and proper that they should be, and every effort should be made to give not only a safe, but a desirable water.

Five Years' Experience with Patrol Maintenance of Wisconsin Highways

By J. T. Donaghey

Maintenance Engineer, Wisconsin Highway Commission

A THOROUGH patrol system was installed in each county in Wisconsin soon after the enactment of the law creating the State Trunk Highway System, in April, 1917. The portion of the system lying in each county was divided into patrol sections by the county committee, acting jointly with the county highway commissioner and our division engineer. The patrolman for each section was selected in the same manner. The county committee advertises in the local press that on a certain day those seeking the jobs of patrolmen for the coming season must report at the county court house. The applicants "if new" are interviewed by the county committee and our division engineer, and the most promising candidates are given the positions. Applicants having served as patrolmen one or more seasons are given preference over new men, and they usually receive more salary.

Each patrolman enters into a written contract with the county and gives a bond in the amount of \$500 for the faithful performance of the work and proper care of the tools and machinery entrusted to him. The contract is also subject to the approval of our division engineer.

On "team patrol sections" the patrolman must furnish a team and wagon satisfactory to the county, the county furnishing a light blade grader, a road planer, a plow, a slip scraper and miscellaneous small tools. On "motor truck or tractor patrol sections" the county furnishes all the equipment.

The salaries paid on team patrol sections range from \$140 to \$165 per month for the 1922 season; those on motor truck and

tractor patrols average about \$110 per month. The season extends from about April 1 to December 1, and from December 1 to April 1 the patrolman agrees to work when requested at a fixed price per hour.

The "team patrol sections" average about $6\frac{2}{3}$ miles each, and as a rule are confined to earth road sections and those gravel sections that carry light traffic. We have few tractor patrol sections. They average about 12 miles in length and are generally confined to earth roads, but are sometimes preferable on heavy-traffic gravel roads where heavy maintenance equipment is

necessary. Motor truck patrol sections average about 18 miles, and are economical only on heavy-traffic roads where heavy maintenance equipment is necessary and where new material must be hauled regularly, on surface treated stone or gravel, and for work on concrete surfac-

One small village of 1,200 people in Wisconsin kept an accurate record through its banks, hotels and business houses during the 1922 season, and found that over \$1,000,000 was left in that vicinity alone by tourists—those traveling for pleasure. The visits of tourists were made possible by the well-maintained county and state highway system of Wisconsin. It has been estimated that over \$100,000,000 is annually spent in the state of Wisconsin by tourists.

ings. We find that on earth or gravel sections where traffic does not exceed an average of 200 vehicles per day, the "team patrol" is cheaper and more satisfactory than any other.

Maintenance Costs

The 1917 Legislature provided for a 5,000-mile State Trunk Highway System, which the Legislature of 1919 increased to 7,500 miles.

The following table shows the actual miles maintained by patrol methods each year, the number of patrol sections, the salary paid patrolmen, the patrol maintenance cost of each type per mile, and the amount expended per mile out of mainte-

| Year | 1918 | 1919 | 1920 | 1921 | *1922 |
|---------------------------------------|--------------|----------------|----------------|----------------|----------------|
| Actual miles maintained | 4,998.9 | 4,998.9 | 7,234.0 | 7,260.4 | 7,458.59 |
| Number patrol sections | 561 | 561 | 791 | 911 | 940 |
| Monthly salary team patrol..... | \$130.00 | \$145.00 | \$165.00 | \$155.00 | \$150.00 |
| Monthly salary motor patrol..... | 90.00 | 110.00 | 125.00 | 115.00 | 100.00 |
| †Earth | 135.21 | 154.01 | 187.24 | 196.21 | 186.40 |
| †Gravel | 120.80 | 133.63 | 184.68 | 193.85 | 183.25 |
| †Stone and gravel surface treated.... | 574.21 | 626.33 | 706.11 | 682.23 | 671.84 |
| †**Concrete | 162.21 | 210.42 | 220.18 | 322.21 | 311.85 |
| Cost patrol maintained | 573,042.16 | 767,302.12 | 1,220,535.00 | 1,326,927.24 | \$1,355,900.00 |
| Cost of betterments | 396,449.65 | 488,529.68 | 756,474.38 | \$1,028,976.04 | 952,850.00 |
| Cost of marking and signing..... | 7,888.22 | 17,776.16 | 28,820.61 | 20,462.14 | 41,250.00 |
| Total expenditures | \$977,430.93 | \$1,273,607.86 | \$2,005,829.89 | \$2,381,413.85 | \$2,350,000.00 |

The above total expenditures average \$278.00 per mile per year.

*Final costs will vary somewhat from figures shown, as the season is not complete at this date (December 15, 1922).

**Annual costs include all shoulder maintenance, which runs high on all surfacings less than 18 feet.

†Patrol maintenance cost per mile.

nance funds for "betterments." "Betterments" consist of widening the road and providing drainage with heavy blade grader work, light resurfacing, new culverts, and the cost of marking and signing the system.

County Trunk Highways

During the first month of patrol maintenance in 1918, the actual driving conditions in Wisconsin were improved far beyond the expectations of the most optimistic friends of patrol maintenance. Again, when the entire system was adequately marked during the week of June 22, 1918, making it possible for the dumbest person from any state to travel the length of Wisconsin without asking directions, our hopes were fully realized, and the public expressed their approval of the system in no uncertain terms.

Several county boards met during the month of June, 1918, and provided for adopting patrol maintenance on important secondary roads. The growth of this sentiment is shown by the following table giving the miles of county trunk highways taken over for maintenance each year by the several county boards, number of patrolmen employed, salary, cost of marking and signing, and total expenditures:

| Year | 1918 | 1919 | 1920 | 1921 | 1921 |
|--|-----------|----------------|-------------|-------------|-------------|
| Miles maintained | 2,021 | 5,590 | 7,743 | 8,980 | 9,885 |
| Number of patrolmen | 232 | 705 | 970 | 1,123 | 1,236 |
| Average monthly salary of patrolmen... | \$125 | \$140 | \$160 | \$150 | \$145 |
| Cost of maintenance | 475,000 | \$1,226,267 | \$1,435,527 | \$1,867,615 | \$2,279,804 |
| Cost of marking and signing..... | ..... | 3,600 | 9,300 | 8,100 | 11,000 |
| Total expenditures | \$475,000 | \$1,273,607.86 | \$1,444,827 | \$1,875,715 | \$2,290,804 |

The above total expenditures average \$214 per mile per year.

Results Obtained

After five years of patrol maintenance we find that the following conditions prevail:

1. Every town, city or village in the state is on a well-maintained and marked highway.

2. Traffic is distributed over a large mileage, reducing congestion on many highways.

3. The average speed of traffic has been increased at least 10 miles per hour, resulting in time-saving beyond computation.

4. Night driving is safe and practical, and our traffic census shows a marked increase each year in night traffic.

5. Prosperity immediately becomes noticeable. The farmers along such routes soon vie with each other in promoting neatness in their road fences, farm buildings and entrances. Farm names appear over the gateway, and the mail boxes are given a fresh coat of paint.

6. Last, but not least, is the tourist, and our definition of a "tourist" is any person using our highways for pleasure, whether a resident of Wisconsin or not. It is extremely difficult to estimate the total amount spent in Wisconsin by tourists. The little village of Kilbourn, located at the lower entrance to the "Dells of the Wisconsin," containing a population of but 1,200 people, furnished us accurate records kept by the banks, hotels and business houses

for the 1922 season, showing that over one million dollars was left in that vicinity alone by tourists.

ACKNOWLEDGMENT.—From a paper read at the annual convention of the American Road Builders' Association, Chicago, January, 1923.

A Unique County Playground

By Luther H. Hodges

IT was the afternoon of July 22, 1922, that I followed a line of autos bound for a "speaking" near the center of Rockingham County, North Carolina. When I arrived at the gathering-place I found over four hundred autos of all descriptions and sizes parked near the Y. M. C. A. hut just beyond a clearing in the woods. The people from these cars were streaming down into the woods, from which came the sounds of band music.

It was the opening day of the Rockingham County Playground and I was one of nearly three thousand people from all parts of the county who had come to witness the opening of this new and unique institution. It was a wonderful day, and the speaker, a popular college president of North Carolina, thrilled his audience as he told of the tremendous possibilities tied up in this wonderful place. He reminded his hearers at the playground that it was the first county-owned and county-controlled playground in North Carolina or elsewhere.

Following up a very remarkable County Older Boys' Conference held at Spray, N. C., in January, 1922, some of the citizens of the county began to make plans for

a central meeting place in the county where such conferences could be held and where various groups of campers from the Y. M. C. A.'s and other institutions could go for a week's camp and outing.

Along in May a group of representative citizens secured from the County Commissioners nearly ninety acres of land on a lease and appointed a Board of Trustees to have the land in control. The stretch of land was ideal for the purpose; it lay near the center of the county and was rugged and beautiful, with enough level spots on the stretch to make development quite practical. There was a small stream running through the property between two high banks, and at a narrow point between these banks a dam was thrown across the stream, which made an ideal and very picturesque swimming hole. Diving-boards, rafts, and rope swings all fitted nicely into the natural arrangements of the swimming hole, and one of the most vital problems in the camp and playground was settled.

A winding road about a half-mile long was cut out and graded from the main county road into the playground, and a baseball diamond was made ready. Just to the



THE OLD SWIMMING HOLE—ROCKINGHAM COUNTY PLAYGROUND



CLASS IN FIRST AID—ROCKINGHAM COUNTY PLAYGROUND

left of the baseball field and at the main entrance to the ground was erected an attractive "Y" hut, a gift of the Associations of the county. On beyond this and toward the swimming hole was built a serviceable and convenient Red Cross hut, which was fitted up attractively. Beyond the Red Cross hut was a dining-room with a seating capacity of about two hundred. The dining-room was completely outfitted. Dotted about over the playground were swings, slides and seats, here and there were natural trails and artificial paths, and over in the woods across a little divide was built a wonderful lodge for the girl campers of the county. Several citizens of the county also built private huts, and a dozen or more tents were brought out and set up ready for use.

All this was done in two months' time and the county could hardly believe its eyes. But soon the people began to believe in the playground and to use it. Every Sunday afternoon during the rest of the summer the playground was visited by hundreds of people, who came from all parts of the county to hear a lecture, listen to a conference, meet friends, or take a stroll in the woods while the children were playing or

swimming. Camping parties have been numerous and the campers have had organized play and instruction. The Red Cross hut has been the scene of much activity. The nurse in charge has given many practical demonstrations, conducted classes among the campers, weighed and examined hundreds of babies and kept busy all the time. Boy Scouts, Camp Fire Girls, Canning Club members and others have found an ideal camp in their own county and have learned to know each other better. A county-wide Sunday School Convention has been held there, and a multitude of picnics from churches, Sunday schools, Masonic bodies and industrial organizations have been enjoyed by people from every section.

The directors, who are representative men and women of the county, are planning to have a full-time manager for next year, with an intensive program that will reach all the people in the county. Their object is to promote and encourage civic virtue and to aid in the development of the physical, educational, religious, charitable, literary, and social interests of Rockingham County.

And the people of Rockingham County are controlling and supporting their playground and believe in its future,

Metropolitan Planning for Chicago and Environs

Conferences of Villages and Cities About Chicago Called by City Club

By Mayo Fesler

Executive Secretary, City Club of Chicago

THAT Chicago has become aroused to the need of regional planning is evidenced by the large attendance of representatives from the municipalities and civic and commercial organizations in the metropolitan area at a meeting which was called by the Chicago City Club on Saturday, March 3. As a preliminary to the conference, the City Club's Committee on City Planning and Zoning prepared a brief report setting forth the need of metropolitan planning for the Chicago area, calling attention to the rapid growth both in the city and in its environs, the lack of adequate radiating highways, the need of better transportation facilities, the absence of sufficient sanitary regulations, and the need of zoning for the whole district.

The speakers were Dwight H. Perkins, Vice-President of the City Club and representing the Forest Preserve District; Charles H. Wacker, President of the Chicago Plan Commission; Samuel Insull, president of several large public utility corporations; Mayor H. A. Pearson of Evanston, representing the cities outside of Chicago; Charles S. Peterson, representing the Board of County Commissioners; Dr. W. E. Evans, representing the health districts and officers outside of Chicago; Jacob L. Crane, Jr., city planning consultant; and Professor Charles E. Merriam, former member of the City Council and Professor of Political Science at the University of Chicago.

More than 200 delegates were present, which indicated the widespread interest in the movement. The delegates from the smaller cities and villages were somewhat apprehensive lest the movement meant another effort at consolidation with Chicago; but the City Club in the invitation assured the delegates that it was not a disguised attempt at annexation, and that any planning project must assume at the beginning

that the several cities and villages will insist upon maintaining their independence and autonomy.

Chicago has had for many years an efficient City Planning Commission at work on internal improvements and embellishments. This regional conference was intended to emphasize the need of broader and deeper planning—broader in the sense of including the city's environs, and deeper in the sense of planning not only for the embellishment of the city, but for its commercial and industrial development, its sanitary protection and the simplification of the governmental machinery.

The City Club's report shows that there are more than 340 local governmental units within the metropolitan area—14 cities, 83 villages, 191 school districts, 29 townships and 31 park districts—expending taxes for local purposes. Chicago adds to her population every ten years a city the size of Baltimore. This increase occurs in spite of the increasing exodus from the city to the numerous attractive suburbs. Chicago's population during the last decade increased 23.6 per cent. The population of the suburban territory, ten miles in all directions from the city limits, increased 76.3 per cent. In other words, the environs of Chicago are increasing in population three times as rapidly as the city itself. According to the estimates of the Bell Telephone Company, the city will have a population of 4,000,000 by 1940. If the present rate of growth continues, the environs will have by 1950 a population of at least 2,000,000, or a total population for the district of at least 6,000,000.

Very little attention has yet been given to the planning of the portion of this metropolitan area where this rapid growth is taking place. Already the development of industrial areas near residential districts or forest preserve lands is causing alarm.

Many of the residential suburbs are being seriously damaged by the encroachment of industries. Highways are becoming badly congested with the development of automobile traffic. Transportation lines are not being extended rapidly enough into the undeveloped areas. On every hand there are evidences of the need of definite planning, the various phases of which were presented by the several speakers. Resolutions were adopted calling for the appointment of a Committee of Twenty-One citizens representing the various sections of the metropolitan district, to consider and recommend "a method by which planning for the entire metropolitan area may be successfully undertaken, the features to be emphasized in such planning, and the extent of territory to be included in the proposed metropolitan planning district."

Distinguished Town Planners and Architects to Cooperate on Regional Plan of New York and Its Environs

THE appointment has been announced of an advisory group of town planners to cooperate with Nelson P. Lewis, who is in charge of the physical survey of the Plan of New York and Its Environs. The boundaries of the sectors for which each consultant will be responsible, are as follows:

Thomas Adams—Area north of city and east of Hudson, including Westchester County, and part of Putnam and Fairfield Counties

Harland Bartholomew—Passaic County and parts of Orange, Rockland, Bergen, Morris, Essex and Hudson Counties in New Jersey

Edward H. Bennett—Richmond County and parts of Middlesex, Monmouth and Somerset Counties

George B. Ford—Union County and parts of Essex, Hudson, Middlesex, Somerset and Morris Counties

John Nolen—Area to west of Hudson comprising parts of Bergen, Rockland and Orange Counties, and on east of Hudson comprising parts of Putnam and Dutchess Counties

Frederick Law Olmsted—Nassau and Suffolk Counties and undeveloped portions of Queens

The Committee on the Regional Plan of New York and Its Environs has also announced that arrangements have been completed for enlisting the cooperation of a group of the most distinguished American architects in its work. Through the efforts of its late Chairman,

The committee will determine whether the financing of the project should be undertaken by private funds or by a publicly constituted body.

One of the difficult angles to the problem will be the fact that the metropolitan district lies in two states, Illinois and Indiana, and a public planning commission covering the entire district would require the joint action of the two states. The problem in Chicago is by no means as simple as the New York metropolitan planning project, which is being financed by the Russell Sage Foundation, or the Los Angeles regional planning effort, which is being financed from county funds. But the unanimity of opinion that something must be done would indicate that Chicago has determined to find some method by which regional planning can be undertaken and made effective.

Charles D. Norton, whose recent death has dealt a heavy blow to city planning, a small number of architects have been for some time at work upon particular localities. These have called in associates and friends to make up informal teams.

The list of architects is not yet complete, but among the architects who have volunteered their services, are the following:

| | |
|-----------------------|------------------------|
| Frederick L. Ackerman | Joseph Hunt |
| Chester H. Aldrich | R. H. Hunt |
| Jerome R. Allen | Robert D. Kohn |
| Grosvenor Atterbury | Grant C. Lafarge |
| Louis Ayres | Guy Lowell |
| Henry Bacon | H. VanB. Magonigle |
| Donna Barber | Henry Rutgers Marshall |
| William A. Boring | Benjamin W. Morris |
| Welles Bosworth | Charles A. Platt |
| Arnold W. Brunner | John Russell Pope |
| Charles Butler | J. Otis Post |
| Harvey W. Corbett | James Gamble Rogers |
| John W. Cross | Philip Sawyer |
| William A. Delano | C. B. J. Snyder |
| Burt L. Fenner | Clarence Stein |
| Ernest Flagg | I. N. P. Stokes |
| Cass Gilbert | Egerton Swartout |
| Bertram G. Goodhue | A. J. Thomas |
| Howard Greenley | Breck Trowbridge |
| Thomas Hastings | John V. Van Pelt |
| Frederic C. Hiron | D. Everett Waid |
| Henry F. Hornbostel | Louis S. Weeks |
| John M. Howells | Lawrence Grant White |

We Apologize to the Dust

A MICHIGAN reader of THE AMERICAN CITY sends us this message of commendation and of criticism, both of which we are glad to accept:

"In your March, 1923, editorial on the subject of 'Getting Ready for Summer,' we notice that your editors have brought to the attention of your readers practically

every conceivable summer suggestion but that of eliminating the dust nuisance. Of course, we will admit that no doubt your editorial staff all live on paved streets and naturally do not have this subject brought to their attention, but we believe that in some future edition it would be well to call your readers' attention to this provision."

Use and Abuse of Systems of Separate Sewers and Storm Drains--Can Their Failure Be Prevented?--II

By Harrison P. Eddy

Metcalf and Eddy, Consulting Engineers, Boston, Mass.

Remedies for Misuse of Separate Sewers and Storm Drains

GREAT care should be exercised in the selection of the type of sewer system to be installed. It should not be assumed that separate sewers are more advantageous, but conclusion should be reached only after careful study of all the conditions, including comparative estimates of cost. In making such studies due weight should be given to the value of the opportunity for disposal of roof water into sewers and to the inequity of affording such facilities to a portion of the property owners and withholding them from others. It may be accepted as a fact that residents will not tolerate standing water in their cellars. In thickly settled communities water cannot be allowed to flow over sidewalks to the street gutters, and, at least in the northern portion of the country, roofs and areas cannot satisfactorily be drained into gutters by pipes passing under sidewalks. Topography, character of soil, climate, present and prospective density of population, frequency and intensity of precipitation, as well as conditions influencing the problem of sewage disposal, are among the important considerations bearing upon such a selection.

It is possible that the zoning system, which is now being favorably considered in many American cities, will simplify the problem of determining the character of sewerage and drainage works to be provided. Whereas formerly it was impossible in many instances to forecast with accuracy the character of development which was likely to take place in the different portions of a city or to provide systems to meet all contingencies, the zoning system now facilitates more accurate forecasting of future sewerage and drainage requirements and there is greater assur-

ance that the assumed future conditions will be realized.

The so-called "English system" has been advocated by some. In this, allowance is made in the separate sewers for such roof water as abutters may choose, or may be permitted, to discharge into them. In some places the unlimited disposal of roof water in this manner would result virtually in a combined system, since roof areas may well equal street areas, and where the community is thickly settled the extent of roofs may be three or four times that of the streets. It is doubtful, therefore, if the "English system," so-called, is of very general application. It must be conceded, however, that some extraneous water will reach separate sewers. Some roofs will be connected through error or surreptitiously. Some cellars will be drained, and some defective connections with sewers are inevitable. Reasonable allowance must therefore be made for such conditions.

Far greater care should be exercised in the construction of separate sewers than has been the case in many instances, in order that the sewers may not become overtaxed because of large quantities of ground water entering them.

Greater effort should be made to secure excellency of workmanship in the construction of house connections. In many cases sewers have been laid in an excellent manner and have been reasonably water-tight; later, however, through carelessness in the making of house connections these systems have been subjected to serious abuse. Mr. Dittoe has suggested* that

"... The most logical and effective method of accomplishing this is the construction by the municipality of all connections to the public sewers from the building to the street sewer and the continuation of municipal control over such connections after they are constructed.

* Proceedings, Am. Soc. C. E., December, 1921.

The sewer department would organize its construction gangs for this work or would enter into annual contracts with responsible contractors, and the property owner would pay to the city the cost of construction, inspection, and recording."

"... It is believed that this method of construction would insure better construction of the connection at lower cost, would largely prevent the misuse of sewers, and would assist in securing efficient operation of sewage treatment processes. Incidentally, it would probably arouse a more lively interest on the part of the city officials in the management and maintenance of the sewerage systems and would likewise remind the public that the system is an important feature of the community development and must be controlled in a businesslike manner if its value is to be realized."

There is much to be said in favor of Mr. Dittoe's suggestion. Where connections are made by contractors, however, the contractors should be licensed annually and should give bond for the faithful performance of their work.

More effective control of the construction and maintenance of house connections should be secured in many cases. Generally such control should be vested in the official in charge of the sewer system. When connections are to be made, written applications therefor should be filed, and written permits for the connections should be issued. The official in charge should be notified when the work is to be done and should provide for the necessary inspection. A record of permits issued and used should be kept in a book provided for this purpose. The inspector's work should also be made a matter of record.

Cooperation between certain municipal departments is very important in securing satisfactory plumbing and house connections. The extent of such cooperation and the departments affected depend upon the local system of conducting the municipal work. The department which has charge of plumbing inspection should require the filing of sketch drawings showing the work contemplated. Before issuing permits for such plumbing these drawings should be submitted to the official in charge of the sewers, for his approval. If the drawing shows erroneous connection of roof water and fixtures within the building, the sketch should be returned to the plumbing contractor for the necessary revision. Until the drawings have received the approval of the sewer official, the plumbing permits must not be issued. It is necessary that

the plumbing inspectors understand the importance of the separation of roof water from sewage and that they shall conscientiously carry out the regulations to that effect.

It is also advisable to provide against incorrect connection made through error. In the city of Philadelphia the usual sewer and drain connections are 5 inches and 6 inches in diameter, respectively; thus it is easy to determine with which pipes the plumbing systems should be connected. In another instance the bells of the cast iron pipes inserted into the foundation wall by the drain-layers are painted white in the case of storm-water drains, and black in the case of sewers.

Complete and accurate records and record drawings of all sewers and drains should be filed in the municipal offices in a manner which will make them readily accessible for reference. Instructions as to the proper use of the systems should be provided by the engineers having their design in charge. Such instructions should be in permanent form and so placed, filed and disposed as to be always in evidence and available. Wall maps, house connection application blanks, permit books and permit blanks should have displayed prominently upon them the proper restrictions upon the use of the sewers and drains.

Suitable statutes or ordinances should be enacted to provide for the proper regulation of house connections. It is expecting too much of city officials to rely upon them to enforce such regulations unless they are specifically set forth in the state laws or in the municipal ordinances. Appended hereto are excerpts of a few laws and ordinances which are typical and may be suggestive to any reader who may be interested in framing a similar statute or ordinance. While a state law is applicable to all municipalities within that state, it may lend local assistance to have in addition thereto the same regulation embodied in the municipal ordinances.

While much can be accomplished by such measures as have been suggested herein, after all, the success of systems of separate sewers and storm drains must depend primarily upon the integrity, loyalty, knowledge and backbone of the city officials in charge. They should recognize that it is one of their important duties,

for the faithful performance of which they have taken oath, to see to it that the sewer and drainage systems are not misused and abused. There is no doubt that in many instances the strict performance of their duty will be unpleasant. In certain aggravated cases such performance of duty will doubtless result in a search for a new position. Nevertheless, it is the author's firm conviction that in many cases systems of separate sewers and storm drains can be saved from failure only by the loyal performance of this duty by the city official upon whom the responsibility devolves.

State and Municipal Ordinances

The General Laws of the Commonwealth of Massachusetts—1921.

Chapter 83, Section 5.—“In this section surface or storm water and such other waters as shall be specified by the department of public health shall be designated as waters and all other waters and sewage shall be designated as sewage. When a town has provided both a drain for waters and a sewer for sewage in a public way, the owner of every parcel of land abutting on such way or connected with such drain or sewer shall arrange his plumbing so that the waters shall be kept separate from the sewage; and shall make such connections with the drain and sewer respectively that the waters shall pass into the drain and the sewage into the sewer in accordance with the directions of the board or officer having charge of the repair and maintenance of sewers in such town.”

Revised Ordinances, City of Worcester, Mass.—1909.

Chapter XXX, Sec. 2.—“The plumbing and draining of all buildings, public and private, shall be executed in accordance with plans and specifications previously submitted to and approved in writing by the Board of Health. Plans and specifications of such plumbing and drainage shall in each case be submitted upon blanks in such form as the Board of Health shall order, and placed on file in the health department. No person shall commence work on such drainage or plumbing until such plans and specifications shall have been submitted to and approved by the Board of Health and a permit issued therefor”

Chapter XXXIV, Sec. 4.—“The superintendent of sewers shall grant permits to individuals to enter their drains into the public sewers and drains, in accordance with the terms of this chapter and the rules and regulations made therefor by the City Council, and shall keep a complete record, in books made for that purpose, of such permits, giving the name of the street, and the number of the estate, if any, name of the owner, size and kind of side drain entered, and the name of the drain-layer making the entrance, and such other facts in connection therewith as may be of importance as matter of record.”

Chapter XXXIV, Sec. 5.—“Applications for permits to connect any private drain with a public sewer must be made in writing to the superintendent of sewers, by the owners of the property to be drained, or by

their authorized attorneys. Said application must be accompanied by a clear description of the premises to be drained, and drains required.”

Chapter XXXIV, Sec. 8.—“Drains and private sewers connecting with public sewers shall be of such size, and laid at such grade, and at such depth as the city engineer or his assistant shall direct. The expense of such engineering, not exceeding 50 cents for each hour or fraction thereof for the engineer, and 25 cents for each hour or fraction thereof for the rodman, shall be paid by the drain-layer applying for the permit, upon the completion of the work” “All work of every kind connected with the laying of such drains, including all repairs, shall be subject to inspection by the superintendent of sewers and be done to his satisfaction.”

Chapter XXXIV, Sec. 14.—“No roof water, surface drainage, or other unpolluted water shall be turned into a sanitary sewer, but may be turned into surface water drains wherever such drains are provided. On hill tops and in other places where it is not intended to provide surface water drains, all roof water and surface drainage may be discharged directly onto the premises of the abutter or into the street gutters, and all pipes or conduits passing under or through sidewalks shall be of such material and pattern and constructed in such manner as shall be directed by the street commissioner. No surface water shall be so discharged as to flow over or upon sidewalks. In sections of the city provided with combined sewers and where surface water drains are not provided, surface water may be discharged into said sewers through pipes separate and independent from pipes carrying sewage, and such pipes shall be laid at such grades, depths and to such points as shall be required by the city engineer, so that they may be at any future time disconnected and connected with main surface water drains.”

Chapter XXXIV, Sec. 16.—“No person as a drain layer shall make any entrance into any sewer unless he be duly licensed by the license board; and such person so licensed shall give a bond, in a sum not less than one thousand dollars, for the faithful performance of such work as he may execute, and to make good any defects which may appear in any sewer, street drain or work done by him, and to remunerate the city and any person for loss or damage occurring in consequence of any act done under any permit granted him.”

Chapter XXXIV, Sec. 18.—“Any drain layer violating any provision of this chapter shall, in addition to the general penalty provided for the violation of these revised ordinances, forfeit his license.”

Revised Ordinances of Brockton, Mass.—1899.

Chapter 5, Section 36.—“No water shall be discharged from the roof of any building, so as to flow along or across any sidewalk upon any street in which a public drain has been laid; and the conductors for such water shall be made by the owner of such building to connect with such drain, under the direction of the committee on sewerage and drainage on the part of the board of aldermen, or such person or persons as they may designate thereto.”

Chapter 28, Sec. 8.—“No persons shall enter, or attempt to enter, a private drain or sewer into a common sewer or its connections, or into the underdrain constructed in connection therewith, unless he is duly licensed thereto, and no person shall cut into, interfere with, or obstruct a common sewer.”

ACKNOWLEDGMENT.—From a paper read before the 1922 convention of the American Society for Municipal Improvements.

St. Jerome, Quebec, Has Won a Forestry Prize

THE cash prize of \$250 offered by Frank J. D. Barnjum to the municipality in the province of Quebec that inaugurated the best municipal plantation, has been won by St. Jerome, in Lake St. John County. The money has been paid

over to the Council, and the good work begun has thus already received a recompense. This idea may be an incentive to others to give practical effect to their convictions about the necessity for the reforestation of the many denuded lands.

The Responsibility of the Community to the University

By Dr. L. D. Coffman

President, University of Minnesota

THE American city in which is situated a university has quite as much the duty to discover the ideals of a true university and to attempt to adjust itself to those ideals as the university has the duty to adjust itself to the practices of the community.

For a number of years I have heard addresses and papers on the subject of the adjustment of the schools to the community. I think the movement thus represented has resulted in great good. It has stimulated the schools to render new types of service, and it has lifted into relief the best things that communities stand for; but I have never heard a paper read upon the adjustment of the community to the schools. The assumption is wide-spread that progress in schools follows in the wake of progress in the community, that new ideas, new pressures, new sanctions are always created outside the schools and later reflected in the schools.

They say it is part of the school's business to study society as it expresses itself in given communities, and then to adjust itself to the changes that are taking place in society. No student of education would deny the wisdom of this point of view, nor could he minimize the desirability of the school's keeping in touch with the world outside, but the point of view that communities are the only agents of progress could hardly be substantiated. Real progress is becoming less a matter of hit or miss, less a matter of chance, or trial and error, as it is sometimes called. True progress must be based upon an intelligent examination of the facts, upon the work of the man in the library or in the laboratory, or of the investigator.

The Establishing of Institutes of Research

In our large cities, research of almost every description is encouraged and supported by manufacturing and mercantile establishments. No one knows how much

money is spent in the course of a year for private research. It has been estimated that between \$75,000,000 and \$100,000,000 is spent annually for research in the field of engineering alone. If the establishments that provide this money would concentrate by building institutes of research at their urban universities and by granting subventions for maintenance and for work upon the various projects in which they are interested, large salaries could be paid to members of the staff, men of unusual capacity and ability could be retained upon the staff, and greater progress could be made in the conduct of the research. Furthermore, it would permit researchers to perpetuate their kind, that is, to train other men in the technique of research.

For the Broadening of Life

Another thing which a city can do for the university located within its environs is to aid the university in beautifying its campus and the environment of the campus. Money for the support of the actual work of the university is essential to its life and development. Gifts should be made to provide buildings and books, to endow chairs and bureaus of research. Gifts should also be made to provide those things which are not absolutely essential for classroom instruction or laboratory analysis, but which minister in a distinctive and fundamental way to the general life of the institution.

Character is not a matter of intellect merely. It is the sum total of all the influences that the individual has experienced. These outside relationships and contacts, in the long run, are quite as important in the formation of character as the knowledge acquired in the classroom. The city, therefore, should assist in providing all those things which aid directly in developing that subtle, pervasive and powerful influence known as the "institutionality" of the institution. An auditorium, a chapel, a campanile with chimes, a stadium, proper resi-

dence halls, beautiful decorations upon the walls of the buildings, fine paintings and statuary, and a beautiful campus are the types of things that I have in mind.

The university wants these things, believes that it needs them, continually emphasizes their importance in the building of character. Communities generally recognize the need—at least they acquiesce in it—but quite as frequently they do little to satisfy it. What a tragedy it is to find a university of which the people are growing prouder every day, located in a great urban center, surrounded by all kinds of manufacturing establishments and hedged in by a network of railways, which constantly pour clouds of smoke over the campus and buildings! Every step possible should be taken to correct such a condition. It cannot be done in a day, but the city planning commission, wherever such a commission exists, should give consideration to the appearance of the neighborhood surrounding the university, and should join with the university in providing conditions that will make the latter as attractive as possible. There is no substitute for good books and fine teachers, nor is there any substitute for attractive environments.

A Wholesome Environment

Another condition to which the city should

give serious attention is the enforcement of law and order and the provision of as moral and religious an environment as is humanly possible for the young people of the university. How disposed we are to parade the misdeeds of a student guilty of some violation of law! How disposed we are when some member of the teaching staff trespasses the moral code, to announce it to the world with headlines! I hold no brief for the misconduct of any one connected with an educational institution, and it may be that the lurid accounts of their misconduct have a wholesome effect upon other persons connected with the institution; but, considering the matter by and large, there is little reason why we should expect more in the way of citizenship and conduct on the part of students and faculties than we do of citizens generally.

Is it possible for a nation to survive when it is partly law-abiding and partly law-disregarding? Is it possible for young people to be trained in the ways of righteousness and rectitude when their fathers and mothers and friends in adult life in the community play fast and loose with the ideals that they are being taught? Can there be a double standard of morals?

ACKNOWLEDGMENT.—Abstract of address delivered by Dr. Coffman before the Association of Urban Universities, at the University of Minnesota, November, 1922.

The Tourist Camp—Asset or Liability?

“THE case against the Tourist Camp” as presented by City Manager Earl C. Elliott, of Wichita, Kans., in the January Number of THE AMERICAN CITY, has brought to Mr. Elliott a letter from Commissioner S. C. Pier, of Portland, Ore., a former resident of Wichita, from which the following paragraphs are quoted:

Your experience, as you relate it, certainly has not been a happy one, and it is possible that it is largely for the reason that your camp was not up to the standard necessary for success. It is my experience that an auto camp cannot be entered into in a half-hearted or small way, but that in order to attract a desirable class of tourists, it must be quite up to date for the care and entertainment of guests. As Commissioner of Finance and Parks and Playgrounds of the city of Portland, the supervision of the auto camp naturally came under me, and I am pleased to relate that after our second year's experience in 1922 we are very enthu-

siastic over this means of entertaining guests from away and giving them a happy and profitable impression of our city.

At our municipal auto camp last season, beginning May 1 and ending December 1, we had 11,260 cars, containing 38,376 people. Every state in the Union and many foreign countries were represented by one or more cars. For example, there were:

- 92 cars from New York
- 220 cars from Illinois
- 261 from Canada
- 2 from the Hawaiian Islands
- 2 from the Canal Zone
- 1 from China
- 2 from Honduras
- 2 from Mexico
- 1 from New Zealand
- 1 from Norway

The equipment of our camp includes a community house with a large stone fireplace in the reception room, comfortable furniture, most of the desirable periodicals and a large writing desk with pen, paper and ink. An information clerk is on duty here. In this building are two toilets, one each for men and women. The



ENTRANCE AND ADMINISTRATION BUILDING, MUNICIPAL AUTO CAMP, PORTLAND, ORE.

camp covers 24 acres, beautifully wooded, with avenues and camping places, making the entire tract available. It is equipped with four batteries of 16 gas stoves each, and a laundry with up-to-date tubs and hot and cold water. The ground is completely severed, and there are 8 up-to-date toilets located at convenient places throughout the camp. Electric lights are to be found in the streets, in the building, and over the cooking apparatus. There are two large outdoor brick and steel-covered cooking furnaces for those who prefer them instead of the gas. A double washing rack for cars has been provided. Located just at the edge of the camp is a store concession carrying a complete line of groceries and vegetables, and serving light lunches, soft drinks, ice cream, etc. Gasoline and oil are furnished at regular down-town rates to those who desire that service.

When a car drives into the camp it is registered as follows: name of owner or chauffeur; number of passengers; residence (city and state), and number of car. Visitors are met at the gate by a keeper with a smile. They are assisted to a location by a helper, who has been given lessons in courtesy and whose business it is to see that the tourist is located in a satisfactory way. Our fees are 50 cents per day per car for 4 days. If the guests desire to remain longer, they are given the privilege of 6 more days without pay, allowing each tourist to stay 10 days if he desires to do so. No car is

allowed to return to the camp until the expiration of 30 days unless the tourist gives notice when he leaves that he desires to return before that length of time.

By city ordinance the camp must be self-sustaining. Last year our total receipts were about \$12,000. This revenue, the payment of which is perfectly satisfactory to the tourists, is sufficient for us to maintain the camp and add a few improvements each year. I have found that tourists who have complained of this modest charge are invariably a class of people that we do not care to entertain.

There is a great deal of satisfaction to our city government in bringing happiness to such a large number of people; but, aside from that,



ONE OF THE CAMP KITCHENETTES

returns come to the city by encouraging people to come here to locate and by their spending during their visit for groceries and material for consumption as well as for gifts for those at home. I have a record of 17 purchases of real estate in the city of Portland by tourists and of 7 other visitors who are now located here and are doing a profitable mercantile business in different lines. No doubt there were many more of whom we have no record. I am sure that the reports that these tourists have been able to take back to their homes of what this country has to offer in lands, scenery, climate and the varied productions of our soil, our

rivers and our great shipping port are a big factor in the steady increase of population that is now coming to Portland. Added to the knowledge of our opportunities, the fact that each guest has been given careful, courteous treatment helps mightily in creating an impression favorable to our city. You could not conceive of another advertising medium that would stand for as much for the upbuilding of your community as a well-conducted auto camp—bearing in mind the fact that no auto camp can succeed on a free basis, but that there must be added to it the dignity of a reasonable charge for service.

Sanitary Obligations of Municipalities to Tourists

THAT it is distinctly the duty of states and communities to maintain tourist camps to provide the necessary sanitary facilities for the protection of tourists and of persons living in the immediate vicinity of such camps is strongly emphasized by *Minnesota Municipalities* in its issue of February, 1923. To quote in part:

"It is estimated that 500,000 automobile tourists visited Minnesota during the past season. This number constitutes an army of approximately one-fifth the size of the United States troops that went overseas during the world war. The army, during the war, was under the strictest sanitary regulation, and every precaution was taken to protect its health. This army of tourists which now passes through our state and uses the tourist camps provided for it, is not so fortunate, for the reason that many camps lack sanitary facilities for the

protection of the people who use them. Insanitary conditions at these camps also make it dangerous for those living in the vicinity of the camps.

"Two sanitary provisions are absolutely necessary in a tourist camp, namely: (1) a safe water-supply; and (2) the proper disposal of sewage, human excreta, garbage and other wastes. Many camps lack both and are a menace to the health of the people, and to the business interests of the state. . . .

"The measures required to safeguard the tourists and the people in the communities where tourist camps are located are well known, but the problem, as a whole, is not simple. It involves: first, an intelligent understanding of the situation by the people; second, the cooperation of state and local authorities and the support of official and voluntary organizations; and third and most important, the fixing of the responsibility for the maintenance of sanitary conditions."

\$16,000,000 Worth of Water-Supply

THE property of the Bureau of Water, Portland, Ore., based on the historical reproduction cost, is valued at \$16,042,974, according to E. C. Willard, consulting engineer, who is making a study of the entire Water Bureau. This value does not include the estimated worth of the water rights, which are naturally high, but does include \$293,926, representing the value of certain privately owned water-mains not yet taken over by the Bureau. There is also included in this value the estimated cost of all services to the curb, as these are maintained and replaced by the Bureau, although in a large number of cases they have been paid for by the property owners.

The tabulation made from this report shows that the biggest single item of investment is the equipment, including pipe lines, mains, reservoir, the pumping plant and similar equipment. This item alone is given as \$14,550,364. Other items making up the total valuation include rights of way and easements, \$11,380; total lands used in operation of property, \$770,667; total buildings, fixtures and grounds used in property operation, \$235,705; total stores and working capital, \$341,644; land held in reserve, \$196; total buildings, fixtures and grounds held in reserve, \$510; equipment held in reserve, \$15,939, and the investment property, \$110,469.—*The Oregonian*, Portland, Ore.

Hints, Helps and Happenings

A Commission-Manager Charter with City-County Consolidation for Butte Has Been Approved by the Montana Legislation

The bill drafted by Professor A. R. Hatton to provide for the merging of the corporate existence of all the cities and towns in the county of Silver Bow, Mont., into one municipal government under the corporate name "City and County of Butte," under a commission-manager plan of government,* was adopted by the Montana Legislature on February 27. The next move in the program of the Butte Chamber of Commerce, which has been the leader in the movement for city-county consolidation in Montana, will be a campaign to secure the adoption of the consolidation charter by the people of Silver Bow County at a special election later in the year.

The American Red Cross Is to Undertake a Great Educational Campaign for Public Health

In the *Red Cross Courier* for March 10, announcement is made by Chairman John Barton Payne of the intention of the American Red Cross to choose a Director of Health Service as soon as a suitable person can be found, and to put into effect the recommendations, published in full in that issue, of a committee of distinguished physicians, surgeons, sanitarians and public health officials.

The report recommends that the public health activities which the American Red Cross has been carrying on should be developed and coordinated into a health program of sufficient appeal to attract a wider Chapter response than has hitherto been manifest. The report says in part:

"The charter of the American Red Cross clearly lays upon it the responsibility of preventing, as well as of alleviating, the suffering created by preventable disease. Abandonment of health activities is therefore out of the question, and if health work is to be performed at all it seems to us clear that it will gain immensely in efficiency by fuller coordination and more definite emphasis.

"From the standpoint of the public health

worker and that of the practicing physician, your committee believes that there is a unique need and a unique opportunity for such a health service as the American Red Cross could render. The protection of the public health is fundamentally a governmental problem; but it is a problem which requires for its solution not only official action, but also the intelligent and active cooperation of the individual citizen. Modern wars are not waged by armies alone. The munition worker, the transport worker, the miner, the farmer, plays a part as essential as that of the soldier. The war against disease must also be a war of the whole people. Such primary requirements as water supply and waste disposal systems may be provided and quarantine regulations enforced by the governments; but the most important problems of modern public health can be solved only with the voluntary cooperation of the individual citizen.

"The object of the public health worker of the present day is to change the daily habits of life of the woman in the home and of the man at the desk and the work-bench. Such a change cannot be effected by laws, but only by the slow process of education. In recognition of this fact the public health movement in the past ten years has become more and more definitely educational in its very essence.

"It is in connection with this great educational campaign for public health that the Red Cross finds its supreme opportunity for leadership.

"The development of health study classes and neighborhood health service committees should, we believe, form the basic and universal element in a comprehensive health program; and the national organization should, in our judgment, take a definite and vigorous lead in this matter by preparing outlines or organization, syllabi for lectures and conferences, plans for surveys and suggestive standards for health programs."

April 22-28 Will Be National Garden Week

With the endorsement of President Harding, the General Federation of Women's Clubs has designated April 22-28, 1923, as National Garden Week. In bringing the program for the week to the attention of the federated clubs and other cooperating organizations, Mrs. Thomas G. Winter, President of the Federation, wrote:

"Perhaps nothing could help to stabilize our minds and spirits in this very tumultuous time so much as a profound and intimate realization of the steadiness of the universe in which we live—its law, its orderliness, its magnificent long purposes and occurrences. The garden

*See article by P. L. Wills in *THE AMERICAN CITY* for February, 1923, page 175.

movement means a great deal more than getting a little plot of land where the child or the grown-up can raise a few sweet peas or radishes. It means that contact with the vitality and reliability and serenity of nature, of purposes and fulfillment, of human life as related to forces infinitely greater than itself. That's the reason we club women are backing Garden Week. We believe in the kind of activity that links itself with ordered purpose—that sees the day as a part of eternity."

A program of suggested talks and events for the week can be obtained from Mrs. John D. Sherman, Chairman, National Garden Week Campaign, 1734 N Street, N. W., Washington, D. C.

Tax Exemption Acts in New York and New Jersey Have Been Held Unconstitutional

On March 21, the Supreme Court of the State of New York, in a decision by Justice Tierney, declared unconstitutional Chapter 949 of the laws of 1920. That statute authorized the legislative body of a county to determine that new buildings of certain types should be exempt from taxation for local purposes during construction and for a limited period thereafter. In the decision, Justice Tierney pointed out the fact that the Legislature had not enacted a statute exempting from taxation any class or type of building throughout the state, but had authorized the legislative body of any county to exempt buildings in that county, irrespective of a like exemption in other parts of the state. For that reason, the Supreme Court holds that the law in question violates the prohibition of the constitution against passing a private or local appeal granting any person, firm or corporation an exemption from taxation on real or personal property. The decision states, however, that the Legislature might enact a general law exempting buildings of the character in question from taxation.

Corporation Counsel George P. Nicholson of New York City has announced that his office will immediately prepare papers to have the case carried to the Appellate Division (the court of last resort in New York State) at the earliest opportunity. It is estimated that in New York City alone, the valuation of new property which had been assumed to be subject to exemption under the law is nearly \$250,000,000.

The highest court in the state of New Jersey, the Court of Errors and Appeals, on March 9 affirmed a decision rendered by the Supreme Court about a year ago, in which New Jersey's tax exemption act was declared unconstitutional. This act, which had been adopted by the Legislature in 1920, exempted from taxation for a period of five years all new construction to be used for dwelling purposes. In handing down the decision, Justice Bergen ruled that the act of 1920 was unconstitutional because it created an arbitrary classification of property and offended against the organic law of the state requiring that property be assessed "under general laws and by uniform rules according to its true value."

The Trenton Times Is Stimulating Civic Service

The sum of \$500 annually is set aside by the Trenton, N. J., *Times* for the purchase of a Civic Loving Cup to be awarded to that citizen who in the course of the year has performed the most conspicuously unselfish service for the community. The awarding of the cup rests with a board representing the City Commission, the Chamber of Commerce, the Rotary, Kiwanis, Lions, Contemporary and the Symposium, Business and Professional Women's and Teachers' Clubs. Nominations are made by citizens, and the Board of Award gives consideration to other names as well. Any man, woman or

**SLUMP IN BUILDING
FOLLOWS RULING ON
CITY TAX EXEMPTION**

Work on Homes Stops Suddenly
as Flood of Appeals for
Relief Is Received.

60,000 OWNERS AFFECTED

Many Unable to Pay Levy if
Higher Court Upholds "Un-
constitutional" Ruling.

MARKED DROP IN PERMITS

Fear Expressed Another Housing
Crisis Will Come—May Ask
Legislature to Help

The building situation was thrown
into the utmost confusion yesterday be-
cause of the decision of Supreme Court
Justice Tierney, who ruled that the tax-
exemption law was unconstitutional.
There was an immediate slump in the
number of plans filed for buildings in
the Bronx and Queens, and prospective
builders hesitated to start new buildings.

The first reaction as reported in
the "New York Times." Later
reports show renewed activity, in
the hope that tax exemption will
be held constitutional by the
higher court

child may name any other man, woman or child, stating the reasons for desiring that person's selection. No worthy achievement is barred. Those who make the award consider moral, spiritual, physical and material service.

The award for civic service during 1922 was made on January 28, 1923, with appropriate exercises held in the Capitol Theater. The presentation of the cup to Andrew Jackson Berrien was made by Governor George S. Silzer, after an address by Edward L. Katzenbach of the Board of Award. In commenting on the award in a letter to *THE AMERICAN CITY*, Walter O. Lochner, Secretary of the Trenton Chamber of Commerce, says:

"Briefly, Mr. Berrien's civic contribution was his day-in, day-out willingness to serve the city's unfortunate and poor people by planning and arranging activities which made for their happiness. Mr. Berrien is not a wealthy man, so that his contribution was service rather than money. And the judges' recognition of service above wealth met with public approval."

Abolition of County Jails Is Urged by Ohio Committee on Penal Conditions

At a conference on prison conditions in Ohio, held at Oberlin, February 15-17, with Dr. George W. Kirchwey of New York as chairman, a permanent committee was organized under the name of the Ohio Committee on Penal Conditions. The following statement of objectives was adopted:

1. The abolition of the county jail as a place for serving sentence, and the substitution of houses of detention for those awaiting trial or held as witnesses; and the enforcement of existing laws regarding the segregation and classification of prisoners.
2. The indeterminate sentence with no minimum limit for all classes of offenders.
3. The power of the court to suspend sentence and place convicted offenders on probation shall extend to all classes of offenders.
4. The thorough mental, physical and social investigation of every person convicted of crime or delinquency, with a view to such classification and differentiated treatment as may best serve the interest of society and the individual concerned.
5. The abolition of the death penalty.
6. A system of labor which shall furnish to every inmate of penal and correctional institutions work of useful and educational character under proper working conditions and at a just wage.
7. The complete elimination of partisan politics from the administration of the penal system, and especially from the department of public welfare, and the board of pardons and paroles.

8. The complete elimination of methods of harsh discipline in the penal and correctional institutions of the state, and the substitution therefor of methods of an educational character, including such a measure of inmate self-government as may furnish training in responsibility, self-control and citizenship.

Professor H. A. Miller of Oberlin College is chairman of the permanent committee.

Milwaukee Is to Adopt a Modern System of House Numbering and Street Naming

The Common Council of Milwaukee on March 5 adopted an ordinance containing the recommendations of the local Commission on House Numbering and Street Naming, which will bring to a successful conclusion the long struggle to establish two proper base lines for the entire city of Milwaukee and the principle of 100 house numbers to the block. At present Milwaukee is handicapped by eight different base lines and four different systems of numbering, a large duplication of street names, and the designation of through streets by different names in various sections of the city. The new ordinance will not go into effect until January 1, 1925, giving business firms sufficient time to dispose of stock on hand bearing the old street and number designations.

The City Club of Milwaukee has been very active in advocacy of the new plan, which has also had the support of many other civic organizations.

The National Association of Purchasing Agents Is Studying Municipal Purchasing Methods

The recently organized Research Department of the National Association of Purchasing Agents is making a study of governmental purchasing in the various state, county and municipal units in the United States and Canada. A collection is being made of statutes, ordinances and facts on centralized purchasing, from which data of particular interest to city administrators will be made available from time to time through the columns of *THE AMERICAN CITY*. Some of this information has been found of immediate practical value in various states where centralized governmental purchasing is a live issue. Until it is published the Association will be glad to reply to requests for information addressed to its Research Department at 19 Park Place, New York City.

Cash Savings on Asphalt Streets

Municipal Asphalt Plant at Portland, Oregon, Cuts Contractors' Prices for New Construction and Maintenance

By A. L. Barbur

Commissioner of Public Works, Portland, Ore.

IN 1918 the city of Portland faced a very difficult problem. A large and rapidly increasing mileage of pavement was passing out from the contractors' responsibility, and the city was assuming the duty of maintaining the pavements, dependent entirely upon the contractors. The paving contractors, having no desire to burden themselves with the maintenance work, charged all maintenance repairs at a schedule rate for utility repairs. This schedule

high prices charged for materials, it was almost an impossibility to get any repair work done at all, and, furthermore, it became evident that the proper maintenance of the streets at the scheduled rates would be a burden entirely beyond the financial powers of the city.

Under these circumstances, the City Council decided that the only way out of the difficulty was the erection of its own repair plant. A site was leased and a small



MUNICIPAL ASPHALT PLANT, PORTLAND, ORE., SHOWING CONVENIENT LOCATION FOR WATER AND RAIL TRANSPORTATION OF MATERIALS

was based on a series of concentric circles or zones, the inner zone with a radius of $1\frac{1}{4}$ miles, the second with a radius of 2 miles, and thereafter the radius increased by increments of half-miles to the fourth and last zone. The minimum charge in the various zones for the first square yard varied from \$5 in the first or inner zone to \$9 to any point beyond the last or four-mile zone. The charge per square foot for all area in excess of one square yard is the same in all zones.

During the war, however, on account of the unprecedented labor conditions and the

plant constructed at a cost of about \$9,000. The city then assumed the duty of making its own repairs—both maintenance work on such streets as the contractors were no longer under obligations to maintain, and all public utility repairs.

In spite of the great increases in the cost of labor and material, the schedule above-mentioned, which was made in 1913, was adopted as the basis of charge for utility repairs, an attempt being made to do the maintenance work at actual cost. By actual cost is meant that due allowance was made for depreciation of the entire plant, such as

buildings, machinery and all equipment, the necessary overhead for supervision and other expense, and a fixed charge per square yard for maintenance of the pavement itself.

Saving on One Job Paid for Plant

After the repair plant had been in operation for several months, it was requisitioned by the Bureau of Parks to pave Terwilliger Boulevard, a scenic driveway under its jurisdiction, with asphaltic concrete resurfacing for a distance of about 1½ miles. This work consisted of laying 22,464 square yards of pavement 2 inches thick. The total cost of the wearing surface amounted to only \$13,972.61, making a unit price of \$.622 per square yard. At the time this work was performed, the prices asked by contractors for bitulithic surfacing ranged from \$1.25 to \$1.45 per square yard. In other words, the saving to the taxpayers on this piece of work alone was more than the total cost of the original paving plant.

Because of persistent demands from the public for lower prices, the city decided to go more deeply into the paving business. Therefore, in the spring of 1920 the city made an appropriation sufficient to erect and equip a complete bituminous paving plant on a parcel of land owned by the city and centrally located along the waterfront. The plant as illustrated has a maximum capacity of 2,000 square yards of asphaltic concrete per day, and represents

an investment of \$93,000. This plant is complete in every detail, with a dock and storage bunkers for sand and crushed rock, and is equally accessible by either rail or boat.

Since the plant was completed and active operations commenced, its success has been phenomenal. By November 30, 1921, the end of the second fiscal year, a total of 253,129.4 square yards of pavement had been laid under contract alone at a saving of \$175,904.76 under the lowest contractors' bids. This amount represents an actual saving to each and every property owner along the streets paved.

In addition to this direct saving to the property owners, the paving plant has in this three-year period of operation (from April, 1920, to November 30, 1922) earned a profit of \$40,467.93 for the General Fund, and a surplus of \$36,612.70 on the original investment of \$93,000.

Since the paving plant has been in operation, there has been a very noticeable decline in the contract prices on pavement except those on which the city engineer for good engineering reasons called for concrete pavement, thus allowing the paving plant no opportunity to compete. The immediate rebound to high prices by the contractors as soon as they were relieved from competition is in itself ample proof that the municipal paving plant has justified its existence, and is securing just and equitable prices for the property owners.



NIGHT ILLUMINATION OF BROADWAY, SARATOGA SPRINGS, N. Y.

Duoflux units with 1,000- and 250-candle-power incandescent lamps

St. Louis Water-Works Extension Assured

WITH the passage of the \$12,000,000 bond issue for additional water-works in St. Louis, on February 9, 1923, the water shortage which threatened to affect the city within five years has been definitely eliminated. The new water-works are to be located on the Missouri River, 8 miles above St. Charles and about 14 miles west of the St. Louis city limits. It is proposed to purchase some 250 acres of land along the river and in time to improve it with walks, drives, shrubbery, trees and flowers, just as are all the grounds around the present water-works station.

The works themselves will be built on the river bank, similar to the plant at the Chain of Rocks, in that there will be engine houses, shops, settling basins and filters. From the pumps, 72-inch steel pipe will be laid in the strip of land purchased for that purpose, and later this strip, 150 feet wide, may serve as a route for a wide boulevard,

paved and lined with trees. These steel mains will terminate in a 200,000,000-gallon reservoir to be built on a 52-acre tract of land now owned by the city and located on the Olive Street Road at Bonhomme Road.

Other steel mains will carry the water from the reservoir to the city limits, a distance of about five miles. The first of these mains will connect at the city limits near Manchester Avenue with the present system of cast iron pipe, now supplying the city. It is probable that this main will also eventually supply Maplewood, Webster and Kirkwood with water. Some time about 1927 it is estimated that 30,000,000 gallons of water per day will be needed to supply the southern portion of the city, and thus relieve the draft on the existing water-works. By 1940 not less than 80,000,000 gallons per day will be supplied by the Missouri River works and other steel mains terminating at the city limits.

On the Calendar of Conventions

APRIL 17-20.—BIRMINGHAM, ALA.

Tri-State Water and Light Association of the Carolinas and Georgia. Annual convention. Secretary, W. F. Stieglitz, Columbia, S. C.

APRIL 30-MAY 2.—BALTIMORE, MD.

National Conference on City Planning. Annual conference. Secretary, Flavel Shurtleff, 130 East 22nd Street, New York, N. Y.

MAY 7-11.—ATLANTA, GA.

General Federation of Women's Clubs. Mid-biennial meeting. Corresponding Secretary, Mrs. George W. Plummer, 878 North Clark Street, Chicago, Ill.

MAY 8-10.—NEW YORK, N. Y.

Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, Mills Building, Washington, D. C.

MAY 8-10.—CHICAGO, ILL.

National Fire-Protection Association. Annual meeting. Secretary, Franklin H. Wentworth, 40 Central Street, Boston, Mass.

MAY 9-10.—BRYAN, TEX.

League of Texas Municipalities. Annual convention. Secretary, Frank M. Stewart, Government Research Division, Bureau of Extension, University of Texas, Austin, Tex.

MAY 16-23.—WASHINGTON, D. C.

National Conference of Social Work. 50th Anniversary Session. Secretary, William H. Parker, 25 East 9th Street, Cincinnati, Ohio.

MAY 21-25.—DETROIT, MICH.

American Water Works Association. Annual convention. Secretary, J. M. Diven, 153 West 71st Street, New York, N. Y.

MAY 21-25.—MEMPHIS, TENN.

Southern Commercial Secretaries Association. Annual convention. Secretary, A. T. Felt, Alexandria, La.

JUNE 4-8.—NEW YORK, N. Y.

National Electric Light Association. Annual convention. Executive Manager, W. H. Aylesworth, 29 West 39th Street, New York, N. Y.

JUNE 11-14.—HAMILTON, ONT.

Canadian Good Roads Association. Annual convention. Secretary, George A. McNamee, 909 New Birks Building, Montreal, Quebec.

JUNE 11-15.—BUFFALO, N. Y.

International Association of Chiefs of Police. Annual convention. Secretary, George Black, Chief of Police, Wilmington, Del.

JUNE 12-14.—BUFFALO, N. Y.

Conference of Mayors and Other City Officials of the State of New York. Annual convention. Secretary, William P. Capes, 25 Washington Avenue, Albany, N. Y.

JUNE 18-21.—WICHITA FALLS, TEX.

Southwest Water Works Association. Annual convention. Secretary, R. D. Morgan, Mexia, Tex.

JUNE 19-21.—MILWAUKEE, WIS.

National Association of Comptrollers and Accounting Officers. Annual convention. Secretary, Mark M. Foote, Comptroller's Office, Chicago, Ill.

JUNE 20-21.—FARIBAULT, MINN.

League of Minnesota Municipalities. Annual convention. Executive Secretary, Morris B. Lambie, The Municipal Reference Bureau, University of Minnesota, Minneapolis, Minn.

OCTOBER 23-26.—RICHMOND, VA.

International Association of Fire Engineers. Annual convention. Secretary, James J. Mulcahey, City Hall, Yonkers, N. Y.

OCTOBER 29-31.—CINCINNATI, OHIO

National Association of Commercial Organization Secretaries. Annual meeting. Secretary-Treasurer, Joseph F. Leopold, 301 Crocker Building, Des Moines, Iowa.

NOVEMBER 12-16.—MEMPHIS, TENN.

American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box, 234, St. Petersburg, Fla.

NOVEMBER 13-15.—WASHINGTON, D. C.

City Managers' Association. Annual convention. Secretary, John G. Stutz, Lawrence, Kans.

Chamber of Commerce Activities in Public Affairs

Naugatuck to Have an Athletic and Recreational Park

NAUGATUCK, CONN.—Over \$68,000 was raised by public subscriptions in Naugatuck from January 20 to 26 in a campaign conducted by the Chamber of Commerce for an athletic and recreational park. This amount will be sufficient for the purchase of the land and for the carrying out of the major portion of the project. Each subscriber is given 14 months in which to pay his subscription.

Two important features of the campaign were the folder headed "For Every Citizen of Naugatuck," and the campaign button, herewith reproduced. The inside of the

folder made a single quarto page, at the top of which was the proposed plan, as illustrated. All its features were noted, and below, across the page, was the display head, "An Athletic and Recreational Park for Every Citizen of Naugatuck!" followed by these statements:

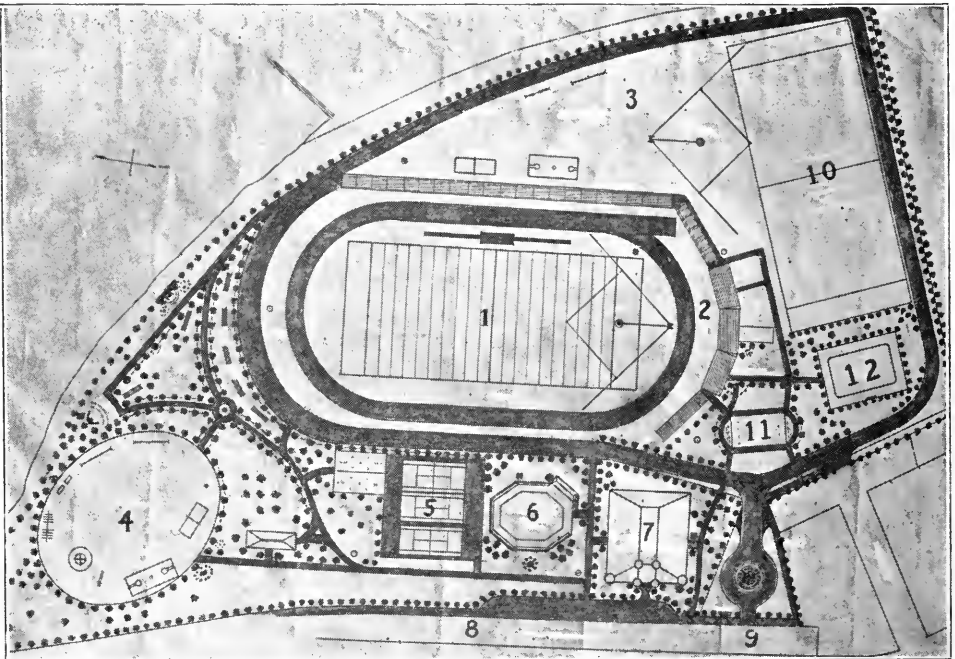
No community in Connecticut is a greater lover of athletics than Naugatuck.

Our football and basketball teams are second to none in the state.

Yet Naugatuck has no Athletic Park adequate to her needs.

Proper facilities for rest and recreation are vital to the development of a busy community.

This Park can be developed for much less money NOW than later.



PLAN OF NAUGATUCK'S NEW ATHLETIC AND RECREATION PARK

- | | | | |
|---------------------------------------|------------------------------|---|--------------------------------------|
| 1. Main field for exhibition games | 4. Girls' playground | 7. Auditorium for dancing, roller skating, concerts, etc. | 10. Practise field and parking space |
| 2. Grandstand | 5. Tennis courts | 8. Trolley landing | 11. Men's Quoit Club |
| 3. Boys' playground and No. 2 diamond | 6. Open pavilion for dancing | 9. Main entrance and driveway | 12. Swimming pool |

A present unsightly portion of our community would be transformed into a most attractive entrance.

The measure of a city's pride is in her public parks.

Next was stated

THE PROPOSITION

It is proposed to secure the "Culver Meadow" property, "Firemen's Field" and Hotchkiss property, all on South Main Street, and consisting of about seventeen and one-half acres, for a Recreational and Athletic Park. About three acres at the north end of this tract would be available for NEW INDUSTRIES. It is proposed to develop the remaining fourteen and one-half acres into a Recreational and Athletic Park second to none in communities the size of Naugatuck.

The park plan, as shown in the cut above, is a possible development of this tract. What can be done depends entirely upon the amount of funds available. Our park when completed will need such features as a football and baseball field, and grandstand with seating capacity of around fifteen hundred, augmented by knockdown bleachers, seating perhaps five thousand more. There should be an auxiliary athletic field, a girls' playground, a boys' playground, tennis courts, shower baths and dressing rooms, dancing pavilion, picnic grounds, etc. And if funds permit, such features can be added as a swimming pool and an auditorium for basket ball and roller skating. If found practical, an ice skating field would be arranged for winter use.

THIS IS DOING THE JOB THE WAY NAUGATUCK ALWAYS DOES IT

In order that this park may always be of the greatest service to all the citizens and properly cared for, it is the plan of the Board of Directors of the Chamber of Commerce to form a separate organization, free from any conflicting political or private interests, to have charge of the development and management of the park. A board of nine trustees has been suggested, each trustee to be appointed for a term of three years, and to serve under the rotary system, so that there will be three retiring and three new trustees each year.

We still have on hand about three thousand of the unique buttons which were ordered for this successful campaign, and we should be glad to dispose of these at a reasonable price to any organization that would find them of service.

LOYD L. ANDERSON,
Secretary, Naugatuck Chamber of Commerce.



When Attending The New York Convention

of the Chamber of Commerce of the United States, visiting secretaries and other delegates are invited to make their business headquarters at the new offices of THE AMERICAN CITY, 443 Fourth Avenue (cor. of 30th Street).

Items from Berkeley's Effective Program

BERKELEY, CALIF.—The Berkeley Chamber of Commerce has recently initiated and assisted in carrying to an overwhelming victory a city manager amendment to the city charter. The measure was carried by a vote of almost two to one.

A comprehensive business and industrial survey of the city has just been completed.

We have formed an organization for reducing mortality rates and have challenged the 63 cities in our class to a year's contest in mortality reduction.

Our Arts and Crafts Committee has established a shop where the work of one hundred craftsmen and artists resident in Berkeley is exhibited and sold, thus helping to establish Berkeley as an important art center.

The Chamber is conducting a series of chamber music concerts by resident artists, with an average attendance of 300 to 400 every other Saturday evening.

Work is under way for the third annual Chamber of Commerce Fair.

We are also working toward a comprehensive city plan.

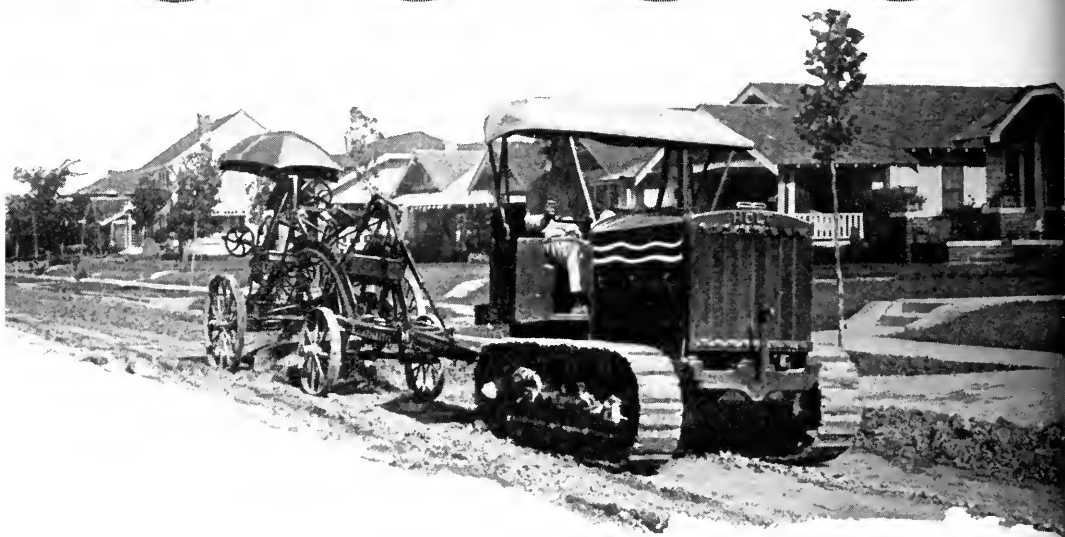
CHARLES KEELER,
Managing Director, Berkeley Chamber of Commerce.

A Tree-planting Holiday

CHICO, CALIF.—Over two hundred American elm trees and seventy-five pistachio trees were planted along the highway between Chico and the Durham State Land Settlement on Washington's Birthday, 1923, through the efforts of the Chico Chamber of Commerce. More than one hundred and fifty citizens of Chico and Durham turned out with picks and shovels, and by noon the entire job was completed, the trees were planted and tied, and guards were placed around all the trees. The success of the day was greatly furthered by the splendid cooperation of the members of the Business Women's Club of Chico, who prepared and served a hearty luncheon to the workers.

The results of that day of intensive work will serve to benefit generations of citizens, tourists and wayfarers and to testify to the efficacy of cooperative effort.

THEODORE GRADY, JR.,
Secretary, Chico Chamber of Commerce.



Modernize Your Equipment

The "Caterpillar's"* field of usefulness is by no means limited to road making. There is a "Caterpillar"* of size and capacity for every power need. On farm or ranch, in the mining, oil and lumber industries, for snow removal and other civic work—wherever power and endurance are at a premium, the "Caterpillar"* has no real competitor.

Are the dirt and gravel streets and alleys of your town graded and maintained as they should be—or are they muddy and full of ruts? Now is the time to put the "Caterpillar"* to work. Your town doesn't own a "Caterpillar"*? It *should*. R. H. Kimball, Supt. of Paving, Colorado Springs, says: "In two years our "Caterpillar"* already has done sufficient work to wipe off entirely its first cost, and we expect it to give more years of satisfactory service." Progressive cities and towns all over the country are using "Caterpillars"* exclusively because no other machine can provide such economical power for grading, leveling, maintenance, scarifying, hauling materials or garbage disposal trains, for snow removal, dirt moving, park improvement, and other public works. Fremont, Nebr.; Brookline, Mass.; New York; Ironwood, Mich.; San Antonio; Chicago; Spokane; Minneapolis; Portland, Me.; Dallas; Gloversville, N. Y; Terra Haute; Dodge City, Kan.; Duluth; Laramie, Wyo., are typical of the hundreds of "Caterpillar"*-equipped municipalities. As a public official you are interested in modernizing the road-making equipment of your community. Our booklet, "Caterpillar"* Performance, will interest you. Send for copy.

* There is but one "Caterpillar"—Holt builds it.

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Working to Make Chicago Safe

CHICAGO, ILL.—Business executives are more and more appreciating that prevention is of greater importance than cure. Upon this premise is based the plan of the Chicago Safety Council, organized in 1920, in cooperation with the National Safety Council, as a department of the Chicago Association of Commerce. Encouraged and inspired by two years of successful, result-getting activities, the Council has now undertaken an enlargement of its operations, and 1923 promises to witness an improvement of the first order in Chicago's accident and fire record.

The Executive Committee of the Council has definitely apportioned the expenditures of its budget of \$100,000 to cover current year operations. This committee is composed of representative business executives and experts in charge of safety and fire prevention programs for some of Chicago's largest industrial enterprises, and recognizes that the Safety Council provides for the great community subject to its influence a type of organization identical to that in effect with the leading industries of the country. Fires and accidents caused an economic loss in this district in 1922 estimated at upwards of \$25,000,000. Here is

the Safety Council program for 1923 to reduce this loss:

1. Enforce the Law.—Disregard of vehicle laws must be stopped. Law enforcement agencies of city and state must be supported by public sentiment. Fifty per cent of arrests to-day are not prosecuted. By making favoritism impossible, cooperating with the police and courts in the performance of public duty and promoting respect for the law among all classes, the Safety Council can do a great work to make life safe in Chicago's streets.

2. Vigilance.—A vigilance organization will be formed of 500 picked men who will report disregard of laws and general carelessness by motorists and others. Specific action will be taken on each report. The arrangement has the support of the Chief of Police, who will take summary action as advisable.

3. Teach Safety in Schools.—A half-million school children will be trained this year in safety and fire prevention. This method teaches respect for the law as well as the practise of care. Parents will be interested through the children. Junior Safety Councils will be formed and the plan extended throughout the Chicago industrial area.

4. Train Industrial Workers.—The Safety Council will operate three safety supervisors' schools and three foremen's instruction courses for industrial workers; two schools for chauffeurs and truck-drivers, and an instruction course in first aid, health and sanitation.

5. Safe Drivers' Club.—Fifty thousand motorists will be organized in a Safety Club, pledged to obey the law, drive carefully and practise courtesy of the road, teaching safety by example and precept to all motorists.

6. Safety Week.—A campaign, designed to impress the public with the fact that 75 per cent of accidents are preventable by compliance with the law and the exercise of care, will be operated on an intensive, high-powered basis.

7. Children.—The Juvenile Safety Committee will conduct extensive activities in the playgrounds and parks and organize the sundry juvenile bodies of Chicago to combat the accident and fire situation.

8. Prevent Fires.—An annual Fire Prevention Week will be operated in connection with the anniversary of the Chicago Fire of October 9, 1871; an instruction course will be given in fire prevention.

9. Public Instruction.—One hundred and fifty safety bulletin boards will be installed and currently maintained at filling stations, garages and other public places as a means of continuously keeping the accident problem before the public.

10. District Safety Councils.—Intensive safety activities will be organized and directed in ten or more districts of Chicago and the adjoining highly developed communities.

HARRY J. BELL,
Secretary, The Chicago Safety Council.

A Community Orchestra

SPRINGFIELD, ILL.—For two years the Springfield Chamber of Commerce, through a special committee, fostered and assisted the Springfield Civic Orchestra, until it had established itself in the hearts of the citizens as one of the most valuable adjuncts to community life. Last December the Chamber gave a dinner in honor of the orchestra—which has grown to nearly 50 members—and invited the public to attend. The orchestra was present in a body and played several fine numbers. At the close of the musical program, the chairman of the Chamber of Commerce special committee moved that a Civic Orchestra Association should be formed that night and that all music lovers and citizens interested in the



CITY COLLECTOR'S OFFICE
CITY OF CHICAGO
ROOM 19, CITY HALL

AGE SYLSTRA, CITY COLLECTOR
ALEXANDER C. RABAY, DEPUTY COLLECTOR
TELEPHONE BANK BAY 5

SAFE DRIVERS

TO CHICAGO MOTORISTS:

1. As the City Executive charged with the immense of Vehicle Licenses for Chicago, I beseech the active CO-OPERATION of all MOTORISTS in our efforts to MINIMIZE DEATH and INJURY due to the operation of motor vehicles.

2. EXPERIENCE DEMONSTRATES beyond question that 90% of these unfortunate CASUALTIES ARE PREVENTABLE by:

- COMPLIANCE with the LAW, especially with respect to SPEED;
- EXERCISE of CARE by all concerned, including pedestrians;
- Lateral COMPLIANCE with the ADMONITION to STOP, LOOK and LISTEN at ALL railroad CROSSINGS;
- PRACTICE of ordinary COURTESY of the ROAD;
- EXHIBITING TOWARD OTHER MOTORISTS and PEDESTRIANS the same REGARD as you EXPECT THEM to EXHIBIT TOWARDS YOU;
- REMEMBERING that the CHILD cannot be expected to exercise the same JUDGMENT as an adult, when CROSSING the HIGHWAY or PLAYING in the STREET—YOU MUST THINK FOR IT.

3. CASUALTIES due to AUTOMOBILES have now reached ALARMING proportions and it is in the interest of the motorist as well as the great public of Chicago that an IMPROVEMENT be EFFECTED IMMEDIATELY.

4. In Chicago and Cook County in 1922, 736 MEN, WOMEN and CHILDREN were KILLED in this manner and 248 of this number were CHILDREN under 16 years of age.

5. The Police Department, public authorities generally, the Chicago Safety Council and other civic agencies are working earnestly to improve the record in Chicago and its environs but, notwithstanding this intense effort, the TOLL of the AUTOMOBILE CONTINUES to INCREASE.

6. I propose, therefore, as a measure of co-operation with all agencies concerned in this extremely important problem, THAT EVERY CHICAGO MOTORIST RESOLVE that in 1923 he will be a SAFE DRIVER, profit by the advice hereto, study the MOTOR VEHICLE LAWS of this City and State and thus GO his SHARE in conserving the LIVES and LIMBS of our PEOPLE.

7. Surely YOUR LIFE and the LIVES of THOSE WHO RIDE with YOU are worth the small effort and time required to WARRANT SAFE DRIVING under all circumstances.

8. SAFETY FIRST is HUMANITARIAN—AND IT PAYS!

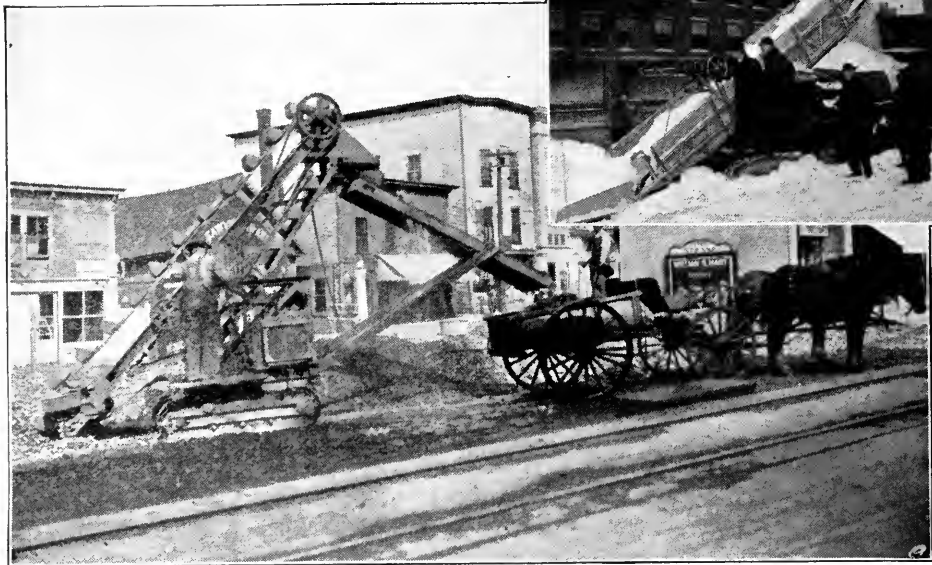
AGE SYLSTRA,

City Collector.

Chicago, Jan. 2, 1923.

THIS LETTER IS DISTRIBUTED WITH ALL
TAX LICENSES IN CHICAGO

*Below, Fa-b'er-Greene Loader at work in Old Town, Maine.
Above, Barber Greene Municipal Loader loading snow.*



How Old Town Handles Crushed Rock

In summer the Municipal Loader replaces a gang with one man—in winter it replaces 60 snow shovelers

IN the fall of 1921, the city of Old Town, Maine, stored a great deal of crushed stone. By spring so much sand, dust and leaves were mixed with it that it wasn't fit for use. But they had a Barber-Greene Loader. They put a $\frac{1}{2}$ inch screen, 10 feet long, under its spout. Then they turned a $\frac{3}{4}$ inch stream of water across the chute.

The crushed rock was washed clean by the time it got into the trucks.

More important to most cities is the fact that the Barber-Greene Loader replaces a gang of shovelers with one man—so that the stone supply, instead of being a drag on the work, becomes a pace-maker.

In Bartlesville, Okla., a Barber-Greene was used to load stone into horse carts on city paving work and did away with all stone shoveling at the storage piles.

BARBER-GREENE COMPANY—Representatives in 33 Cities—515 W. Park Avenue, Aurora, Illinois

In Oak Park, Illinois, Barber-Greens in 1922 were so effective in loading sand and stone that not a single shoveler was used, not even for cleaning up.

Even in Tokyo, Japan, where labor is cheap, the municipality uses a Barber-Greene to save money and speed the work. The new Barber-Greene Municipal Loader has the additional advantage of having a removable boom so it can be converted into a snow loader in winter.

Chicago says that in handling snow the Barber-Greene replaces 60 shovelers; Albany says that it is over 30 times as fast as hand labor; Boston "L" officials say that for them it is equivalent to 150 men. Because of the threatened scarcity and high cost of shovel labor the Municipal Loader will be especially popular this year. Send now for details, prices, and performance records.

BARBER GREENE
Portable Belt Conveyors  Self Feeding Bucket Loaders
Automatic Disc Feed of the B-G Loader

upbuilding of the community should be invited to join. Membership dues were fixed at \$5 per season, each membership entitling the holder to two season tickets to the concerts of the orchestra.

The membership of this new organization has grown to 600 and is still going up. At the first concert after the formation of the Association, 1,500 people were in attendance, proving that the orchestra has fully established itself in the city of Springfield.

C. E. JENKS,

Secretary, Springfield Chamber of Commerce.

Chamber Puts Trolley Across the Thames

NEW LONDON, CONN.—A new highway bridge was recently opened across the wide Thames River, connecting New London and its territory with eastern New England. For some time the receiver of a defunct and bankrupt trolley system that operated a trolley line to the river's edge, where it connected with a toll ferry, had wished to operate his trolley across the bridge and into New London—a plan that would unquestionably be profitable. The courts would not grant a franchise for this line unless there was sufficient financial assurance as to the reliability of the enterprise.

The New London Chamber of Commerce then went into the trolley business. A committee of the Chamber agreed to obligate the Chamber to underwrite the amount necessary to satisfy the court. This committee then went out among the members and raised in subscriptions approximately \$20,000. The community now has a new and successful avenue of transportation across the river, direct into the business center of the city.

A formal opening ceremony was held by the Chamber, dedicating the new trolley. The Mayors and the Town Councils of the cities on both sides of the river met in the middle of the bridge, there shook hands and pledged themselves to renewed efforts to help each other and their respective communities to be better, bigger and busier in every way. The first two days of the celebration were devoted to a big "Suburban Trading Day," in which some 200 merchants participated under the direction of the Chamber.

As far as we know, this is the first time

that a chamber of commerce has gone into the trolley business and made a success of the venture.

JAMES G. HAMMOND,
Manager, New London Chamber of Commerce.

Playgrounds Equipped and Supervised

FINDLAY, OHIO.—The children of Findlay were provided with equipped and supervised playgrounds last summer by the Playgrounds Committee of the Chamber of Commerce. Eleven prominent and interested ladies volunteered in this work. They raised the funds to provide playground equipment at the larger and more centrally located schools and secured also the services of two supervisors. In addition to this paid supervision, the ladies spent much of their time in the playground work, mingling with the children and teaching games.



The story-telling class, as illustrated, proved popular with the children and their mothers. Each of the committee ladies helped in this work, leaving the more strenuous exercises to the paid supervisors.

Over 1,200 children of Findlay were directly served by the playground movement. The mothers always felt safe in sending them to the playgrounds, knowing that they would be out of mischief and out of danger. The average daily attendance at the Lincoln School playground alone was 187.

O. O. McLEISH,
Managing Secretary, Findlay Chamber of Commerce.

How Is It in Your Town?

Some live in a town to live;
Some live in a town to die;
But why permit those there to live
Who permit their town to die?

BEN H. BUSMANN.

MONARCH

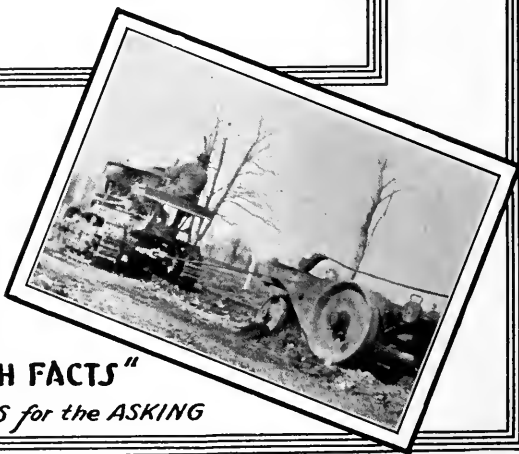
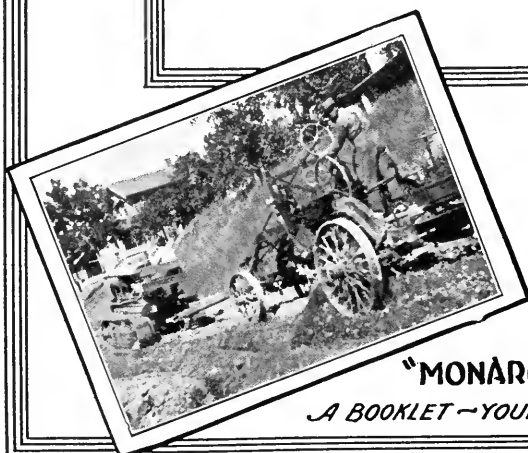
THE MOST DEPENDABLE CRAWLER TRACTOR

A PAYING INVESTMENT

Contractors and municipal departments having large dirt-moving projects in prospect should investigate Monarch industrial tractors which have been the means of increasing the profits or saving taxpayers' money on many grading and hauling jobs. This super-tractor is built to stand the heaviest demands made upon it 365 days in the year. Simplicity of construction, accessibility and high grade material are Monarch qualities.

Let us send you the story of the trip of a stock Monarch Industrial Tractor from Watertown, Wisc., to New Orleans, La. This story with "Monarch Facts" will demonstrate the dependability of this tractor which has increased profits on many large road jobs and is an ideal machine for opening roads in winter.

MONARCH TRACTORS INC
WATERTOWN WISCONSIN



"MONARCH FACTS"

A BOOKLET—YOURS for the ASKING

Financing Child Welfare Movements

By Henry S. Curtis, Ph. D.

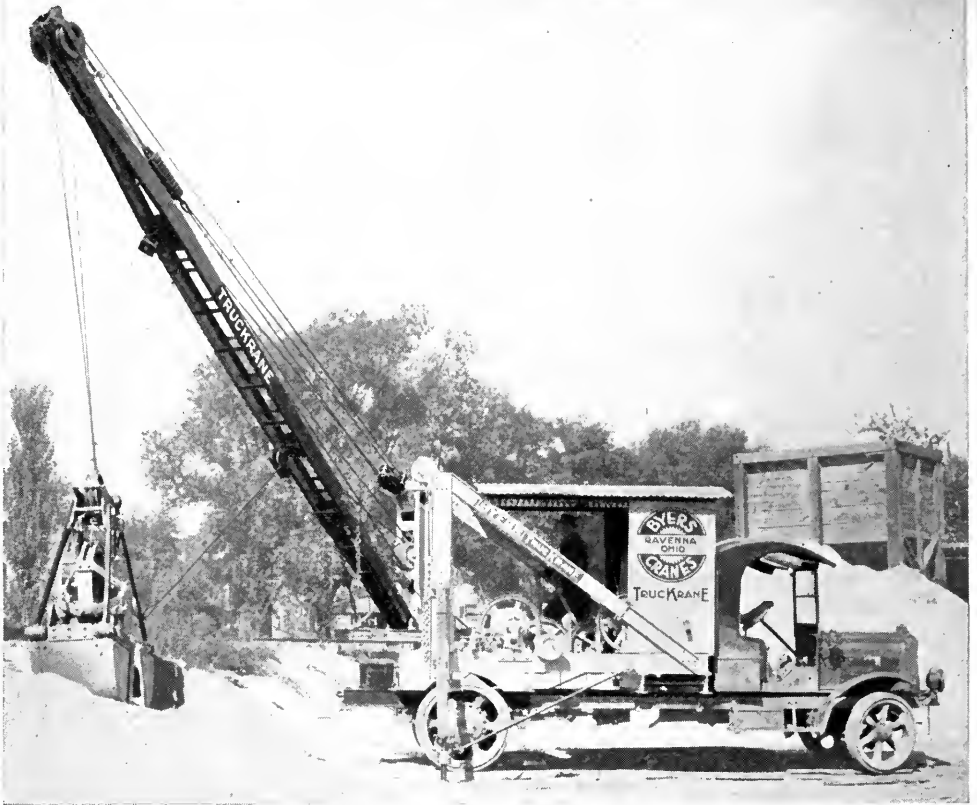
WHAT more important work can any city undertake than to make it the best possible place for the rearing of children! We now know what is necessary to save the lives of children. We have reduced our infant death rate from 140 to 85 per thousand in the last two decades, and we might easily run this down to 35 or 40 if we would but put into practise what we already know about child hygiene. We could also run our rate of juvenile delinquency down to a quarter or a third of what it now is, if we would undertake a wide program of community welfare. Public morality is purchasable if the city is willing to pay the price.

But whenever anything of this sort is discussed, someone always raises objection to any increase in taxes. To carry out a comprehensive program would cost America the price of one or possibly two battleships. Many communities have worked for a low tax rate in the feeling that a low tax rate was desirable, and that thereby they made the city a cheaper place to live in. Both of these points of view are, I think, a mistake. I have never yet heard of a man who boasted of the small allowance he gave his wife to keep house on, because it is realized that if the wife has only a small allowance, the house will not be as well kept as it would be if she had more. The same is true of our municipal housekeeping. We cannot buy as much education for ten thousand dollars, as we can for twenty thousand dollars, nor as much street lighting, or paving, or anything else that makes an up-to-date city. The city that boasts of a low tax rate is always a Nineteenth Century city instead of a Twentieth Century city.

If we look back two hundred years, we find that there were then no public schools, no fire departments, no police departments, no park departments, or dozens of other departments which are now found in our city governments. All these new movements have increased the value of property and made the city more attractive as a place of residence. They have added also somewhat to the tax rate. But the amount we pay in taxes is always a small propor-

tion of our expenditures, and in any well-governed city it reduces our private expenditures by more than its sum. If we should wish to reduce our tax rate as much as possible, the best thing for us to do would be to drop our public schools. This would cut our taxes in two, or perhaps divide them by three, but it would be much more expensive to send our children to private schools than to public schools. While our taxes would be less, the city would be more expensive as a place of residence. It is believed that this is true of most movements for child welfare. They add much to the happiness and efficiency and morality of child life. They make the city more attractive as a place of residence; and they take from private expenditures more than their actual sum. Under existing circumstances America must solve this problem of child welfare not merely for herself, but for the world.

Several notable experiments in this field are now being carried on. Three years ago the city of Framingham, Mass., received an appropriation of \$10,000 for a series of years from the Metropolitan Life Insurance Company, in order to eliminate tuberculosis from the city. In the three years since this experiment was started, it has cut the death rate from tuberculosis nearly in two and at the same time run the rate of infant mortality (children dying during their first year) down to 61 per 1,000. There is now being carried on in the city of Mansfield, Ohio, an experiment of the utmost promise. This is being conducted by the National Child Health Council, in order to work out model conditions in child health. The Red Cross has furnished \$200,000 for this experiment, and the city is giving full cooperation. The Commonwealth Foundation has set aside an annual appropriation of \$230,000 for a child-welfare demonstration in three cities in the middle west. The Milbank Foundation has appropriated \$400,000 annually for similar demonstrations. The world will watch these demonstrations with great interest. Whatever practical methods are evolved are sure to find their way everywhere.



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TRUCKCRANE'S long, nimble boom can make the complete round trip—in empty and back loaded—every 20 to 30 seconds; and the special Byers Bucket takes a liberal half-yard at every grab. That means an empty gondola and a mounting stockpile at a rate you may have never thought possible!



Truckcrane is a portable crane of powerful, sturdy construction, mounted on a motor chassis. We furnish the crane, you furnish the truck—any truck, second-hand or new, of 5-tons' capacity or greater, measuring 9 feet 6 inches or more from back of driver's seat to center of rear axle.

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TruckKranE

A program of child welfare represents a fundamental interest of all the people. If they will stand together, it can be carried out in almost any community. In serving the community in this way, parents are not merely doing their duty as citizens, but they

are also improving the conditions under which their children are to live, and furnishing them a living example in good citizenship. Child welfare is the one interest in which it should be possible to unite a community and give it a soul.

What Is the Matter with the Carnival?

THE recently published Proceedings of the 1922 Convention of the National Association of Amusement Parks contains a paper by Judge Charles A. Wilson of Louisville, Ky., which is of special interest in connection with the campaign now being waged by many civic bodies against low-grade traveling carnivals. Judge Wilson's reply to the query, "What is the matter with the carnival?" might almost be summarized in the one word "Everything." To quote, in part:

"It appears from the information gleaned throughout the country, and upon the testimony of the daily press, carnivals as a rule have assumed to defy public opinion, pander to the lowest men, and violate all the laws against gambling.

"The Chamber of Commerce of North Chicago, and the Chamber of Commerce of Decatur, Ill., are to lead a state-wide fight against carnivals, claiming they leave a trail of filth and woe; while in an Ohio city an ordinance is being prepared to prohibit carnivals because they promote brawls and disturbances of various kinds. In San Antonio, Texas, the women have taken up arms against carnivals, resulting in the appointment of a censor to prevent immoral carnival shows. In Georgetown, Ky., an ordinance has been passed prohibiting any carnival company from operating in that city or within half a mile thereof; while in Bristol, Tenn., Rotary and other civic clubs, together with the Retail Merchants' Association, have denounced the carnivals as exerting a very bad influence on the population and robbing a class of citizens of money badly needed by them. Charlotte, N. C., has placed a ban on carnivals or midways. At Birmingham, business men, nauseated by the conduct of gambling carnivals, insist upon an ordinance making it impossible for carnivals to operate there. The *Minneapolis Journal* in-

sists carnivals should be shut out of that city, not only because they provide a low grade of amusements, and usually bring sure-thing gambling schemes, but the worst is they are traveling focuses of disease, especially venereal disease.

"The progressive *Cincinnati Post* says 'there is very little to be said in favor of the carnival under most favorable circumstances. The Marion, Ind., *Leader-Tribune* says that the carnival takes money from those who can little afford to lose; that a carnival cannot live without games of chance. The Gallespie, Ill., *News* says, 'If there is one thing Gallespie can do without and keep its health and happiness, it is a carnival. What excuse these shows have for traveling over the country is a mystery. * * * They have long outlived their usefulness.'"

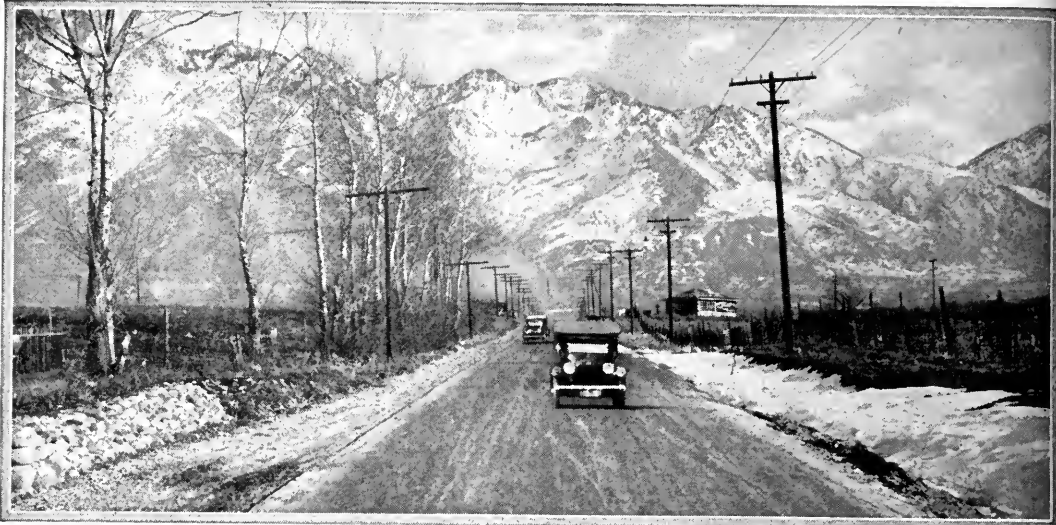
Following the reading of Judge Wilson's paper a resolution was passed condemning certain practises which in the past have been accredited to some outdoor amusements, and placing the National Association of Amusement Parks on record as absolutely opposed to the following in any parks associated with that organization:

1. Gambling for money in any form
2. Wheels or other apparatus with crooked or unfair attachments
3. Hoochie-Koochie dance shows
4. Forty-Nine Camps, where hired women dance with patrons
5. Any blow-off or behind-the-curtain show for men
6. Any obscene or suggestive shows or exhibition
7. Any unsafe or improperly constructed ride or apparatus
8. Unclean, immoral or disreputable employees in any exhibition or on the grounds

The Ontario Municipal Association Has a Woman President

A new step was taken by the Ontario Municipal Association at its last convention by the election of Miss Mary Grant as President. Miss Grant took over the work of her father, James Grant, as Clerk and Treasurer of London Township, Ont., when

he was taken ill in 1900, and also his work as Treasurer of the London Mutual Fire Insurance Company, and acted in both capacities until his death in 1921. She is experienced in welfare work and represents the township on the Chamber of Commerce.



Was Winter the Waterloo of Your Roads?

Has the Spring thaw turned the highways of your community into hub-deep bogs of mud—shut you off from town and neighbors?

Think what it would mean if you had roads like those pictured here. Winter's frosts, Spring's thaws, and Summer's suns have no effect on them.

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Your community — any community in fact — can afford these modern highways. Their first cost is comparatively low. Over a period of years Tarvia Roads prove so economical that the saving in maintenance makes it possible to increase the mileage of good roads in your community.

In many cases, by the addition of a Tarvia top, old macadam or gravel roads may be converted easily and economically into fine modern, traffic-proof highways.

There is a grade of Tarvia for every road purpose—new construction, repairs and maintenance.

A typical Tarvia Road. 77th South Street, Salt Lake County, Utah.



Carthage-Antwerp Road, Jefferson County, N. Y., another Tarvia Road.



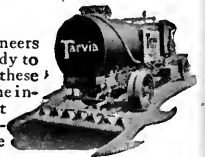
Flourtown Road, Plymouth Township, Montgomery County, Pa. Treated with Tarvia.

Tarvia

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Special Service Department

This company has a corps of trained engineers and chemists who have given years of study to modern road problems. The advice of these men may be had for the asking by anyone interested. If you will write our nearest office regarding road problems and conditions in your vicinity, the matter will be given prompt attention.



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The City's Legal Rights and Duties

Information for City Attorneys and Other Municipal Officers, Summarizing
Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

The Demolition of Dilapidated Buildings

AN Idaho district judge has sustained the right of the city of Lewiston to compel removal of dilapidated buildings, thereby drawing attention to important legal rules concerning municipal power in cases of this kind. Decisions of courts of last resort throughout the country appear to sustain the following principles laid down by the judge in this case:

"Municipal corporations are usually given power to define, regulate and abate nuisances within their respective limits; and in this case the power has been given to the city of Lewiston. There is no precise and practical definition of the word 'nuisance' in this connection. Some things are in their nature nuisances and are so recognized by the law. Other things are of such a character that in their nature they may be nuisances but as to which honest differences of opinion may exist among men of impartial minds as to whether they are actually nuisances. Another class are those things which in their nature are not in themselves nuisances but which may become such by reason of their locality, surroundings, or the manner in which they are conducted.

"A municipal corporation has not power to declare conclusively such a thing to be a nuisance, but can only declare such of them to be nuisances as are in fact so.

"It is generally conceded that the legislature may lawfully delegate to municipal corporations to be exercised within their corporate boundaries the power to declare what shall constitute a nuisance and to prevent the same, and ordinances adopted pursuant thereto are usually sustained. And where a thing may or may not be a nuisance, depending on its location, management or use, and the conditions existing in the municipality, thus requiring judgment and discretion in determining the matter, the determination of the question by the municipality is held to be conclusive on the courts. But the mere grant of power to the municipality does not deprive the courts of their power to review its determinations. All ordinances must be reasonable and the powers therein must not be exercised arbitrarily or with discrimination."

The leading decisions of courts of last resort have maintained that municipalities may not arbitrarily order the removal of private buildings; that such orders must rest on a reasonable exercise of the police power to safeguard the public health and safety; that they cannot find support in purely esthetic considerations.

"The absence of beauty in architecture will not constitute a structure a nuisance," declared the Texas Court of Civil Appeals in the comparatively recent case of *Shamburger vs. Scheurer*, 198 Southwestern Reporter, 1069.

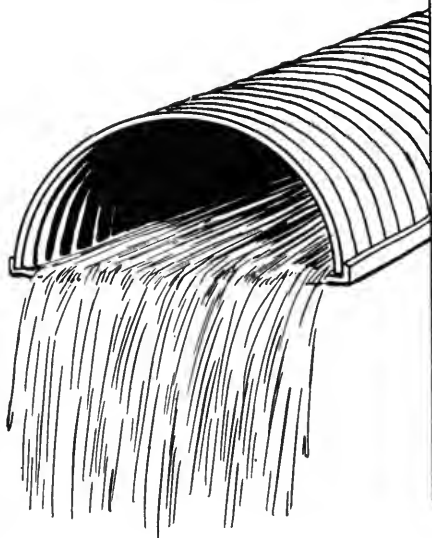
And in the case of *Kilts vs. Supervisors of Kent County*, 162 Mich. 646, the Michigan Supreme Court said:

"We are of the opinion that a nuisance involves, not only a defect, but threatened or impending danger to the public, or, if a private nuisance, to the property rights or health of persons sustaining peculiar relations to the same, and that the doctrine should be confined to such cases."

In the case of *Ferguson vs. City of Selma*, 43 Ala. 398, complainant unsuccessfully sought to enjoin defendant's officials from executing an order for the removal of dilapidated and unsanitary houses owned by him. Affirming a decree of a chancellor dismissing the suit, the Alabama Supreme Court said in part:

"The proofs show that the tenements mentioned in the bill were two old and almost worthless houses, filthy and crowded with filthy tenants, and that they were injurious to the health and comfort of the neighborhood, and had been occupied by patients afflicted with the smallpox, and were in an improving and flourishing part of the city, and that the owner was able to repair and improve them, but failed to do so. There was no proof showing what the rent was worth, except by implication or con-

ENDURANCE



ENDURANCE is the ability to bear and continue in spite of destructive forces. In this respect Newport Culverts are pre-eminent in the culvert field. Made of GENUINE, OPEN-HEARTH IRON (99.875 % pure copper alloy), these culverts are the most rust-resisting on the market.

In strength, they have never been found wanting, for under the heaviest fills, with the greatest loads, they have carried the burden without deformation. They are guaranteed to last longer under identical conditions than any other corrugated metal culvert pipe.

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jecture. And the tenements had been condemned as a nuisance by the Board of Health of said city of Selma. There was some proof, on the part of complainant, that the houses had been cleaned and whitewashed when the witnesses examined them, but none that they might not still be injurious to the health and comfort of the people of the vicinity in which they were located.

"It is, no doubt, a very serious and important duty of the corporate authorities of a city, in the latitude of Selma, to guard the health and comfort of its people, and we would interfere with very great hesitancy with the prudent discharge of this necessary duty."

But in the much later case of *Radney vs. Town of Ashland*, 75 Southern Reporter, 25, the same Court shows that a building must be clearly a nuisance before its removal may be enforced. There the Alabama Court says:

"A vast majority of the houses in this section of the country are built of pine, and a large percentage of them are more or less old, and 'somewhat dilapidated.' Reason and sound policy concur with judicial opinion in denying that such buildings, even in towns and cities, are *per se* nuisances. *Baumgartner v. Hasty*, 100 Ind. 575, 50 Am. Re. 830; *City of New Orleans v. Lagasse*, 114 La. 1055, 38 South. 828; 2 Wood on Nuisances (3d Ed.) sec. 746.

"Nor does the use of such a building for the carrying on of the lawful business of a livery and feed stable, or an automobile garage, with the incidental storage of feed stuffs and gasoline, constitute a nuisance *per se*, although its maintenance may increase the risk of fire to neighboring houses. *Harris v. Randolph Lumber Co.*, 175 Ala. 148, 57 South. 453; *Rouse v. Martin*, 75 Ala. 510, 51 Am. Rep. 463; *Duncan v. Hayes*, 22 N. J. Eq. 25; 1 Wood on Nuisances (3d Ed.) sec. 148. See, also, *Ray v. Lynes*, 10 Ala. 63.

"We think the proper test of a nuisance in such cases is stated by Mr. Wood in the text just above cited as follows:

"In order to render a building a nuisance, by reason of the exposure of other buildings to danger from fire, the hazardous character of the business must be unmistakable, the danger imminent, and the use of such an extraordinary and hazardous character as to leave no doubt of the nuisance. The mere fact that the business carried on there is of a hazardous character, and largely increases the rates of insurance upon surrounding property, is not sufficient; it must appear, not only that the business or use to which the building is applied is hazardous, but also that it is conducted in such a careless manner, or in such a locality, as to make injurious results probable.' . . .

"In what we have said we are not to be understood as laying down a rule which would thus narrowly restrict municipal legislation for the general safety of the people. Large powers

to this end have been conferred by special charters. . . .

"But in any case, it is important to observe that a building which was lawfully erected, and is a nuisance only because of the mode of its use, cannot be destroyed or removed. Only the business or use can be suppressed. *Cuba v. Miss. C. O. Co.*, 150 Ala. 259, 43 South. 706; 2 Wood on Nuisances, secs. 744, 745. In short, the remedy reaches no further than the necessity of the case demands. Many illustrative cases are collected in the note to *Evansville v. Miller*, 146 Ind. 613, 45 N.E. 1054, 38 L. R. A. 161, 166."

In the case of *Pennsylvania Railroad Co. vs. Kelley*, 77 N. J. Eq. 129, it was decided by the New Jersey Court of Chancery that a building which, because of its inherent weakness or dilapidated condition, is liable to fall into a highway and injure persons, rightfully there is a public nuisance, and the owner may be compelled to either repair or remove it.

But the same Court decided in the case of *Rosenberg vs. Sheen*, 77 N. J. Eq. 476, that under a municipal ordinance providing that an unsafe building must be repaired, or that it may be ordered to be torn down if the building inspector declares that it cannot be made safe, an adjudication by the city building department, condemning the building and ordering its demolition, without any previous finding by the building inspector that it cannot be made safe, and without notice to the owner and opportunity of the owner to be heard, is void.

In a case decided June 12, 1922 (*State vs. Keller*, 189 Northwestern Reporter, 374), the Nebraska Supreme Court adjudged to be unconstitutional a statute declaring that failure to comply with an order of the State Department of Trade and Commerce for abatement of a nuisance charged to exist in the maintenance of a dilapidated building should constitute a misdemeanor. The decision proceeded upon the ground that the law denied due process of law, in failing to provide for notice to the property owner and opportunity to be heard. It was further decided that a finding by a state fire marshal, or other official, that a building is a nuisance is in no way conclusive upon a property owner who has not been notified and given a chance to be heard in the determination of the matter.



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The Grand Rapids Franchise

A Reply by Mr. Nutting to Dr. Wilcox's Criticism in the March Number of
THE AMERICAN CITY, and a Rejoinder by Dr. Wilcox

TO THE EDITOR OF THE AMERICAN CITY:

In reference to criticism of the Grand Rapids Railway franchise, by Mr. Delos F. Wilcox, I am not able to see how anyone can conclude from its provisions that this grant is a perpetual franchise. Neither is there a single provision that abrogates the city's "police power," unless "police power" is defined as the power to refuse the use of the streets by any person or corporation for any purpose which will accrue some selfish benefit while serving the public.

The declaration of the intent of the grant permeates its entire structure. Likewise, the very existence of the franchise in its present form is its own proof of the fact that the public service is considered paramount.

It must be admitted that the rate of interest allowed approximates twice that which the city pays on its own bonds, but that's the price we pay for corporate ownership and management. Theoretically, 3 per cent on the capital could be saved by municipal ownership, but could it be done in practise? If corporate ownership is preferable to municipal ownership, who can say what it will cost to raise capital for urban transportation during the next 30 years?

In the face of the experiences of Saginaw, Des Moines, and other cities, the people of Grand Rapids voted by a large majority to retain and maintain adequate urban transportation service regulated by the rules of intelligent arbitration.

The point that a city shall have absolute authority to say what shall be and what shall not be done with its streets, is well taken, but where millions of dollars of capital are required, investors must know that their investments are reasonably well protected by franchises. Otherwise they would not invest and the city would have no transportation system at all, except by municipal ownership, which may or may not be desirable.

The entire theme of the Grand Rapids franchise is "mutual benefits," and the peo-

ple of Grand Rapids believe that this has been accomplished.

H. GEO. D. NUTTING.

TO THE EDITOR OF THE AMERICAN CITY:

Mr. Nutting admits that, under the new franchise, Grand Rapids is bound to pay for its street railway capital almost double the rate paid on municipal bonds. He denies that the franchise is in any sense a perpetual one, or that there is any provision in it abrogating the city's "police power." Franchises are limited to 30 years under the Michigan constitution, and, of course, the city of Grand Rapids could not confer upon the street railway company rights directly contrary to this provision of the constitution. However, the following provisions of the franchise are of uncommon interest:

The section defining the term is positive in its language, to the effect that the franchise "shall continue in force for a period of thirty years." It does not say how much longer. In another section, however, it says that if, at the termination of the franchise by lapse of time, the city does not elect to buy the property on the terms prescribed by the franchise, the Commission may give a new franchise to another party, which, however, would require that such other party purchase the property, with the further provision that the present grantee shall have the right to continue to operate its property under the terms of such reasonable franchise as the city may adopt, until the city is ready to take it over. What I said in my previous comments was that in so far as it was possible to be done, the franchise had been made perpetual, subject to the right of the city or some other grantee to purchase at the price fixed in the franchise, plus 10 per cent.

With respect to the abrogation of the police power, it is clear that a board of arbitration, upon which the company has equal representation, has authority paramount over the City Commission in such matters as the determination of what ex-



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tensions shall be built and what service shall be rendered. The municipality has to that extent been divested of the police power in favor of an authority half public and half private. Under those circumstances, the company shares equally with the city the power to regulate. It is as if in the days of the saloon a city council had been given authority to pass an ordi-

nance fixing the time when all saloons must be closed, subject to the provisions that if, for example, it fixed midnight and the saloonkeepers did not like that hour, they could refer the question to a board of arbitration, whose authority in the matter would be paramount to that of the city council.

DELOS F. WILCOX.

One Method of Lessening Street Congestion in Large Cities

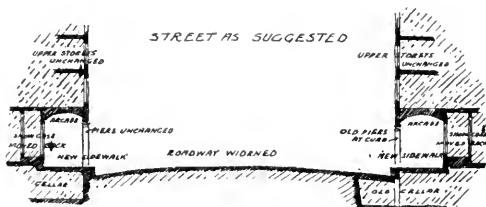
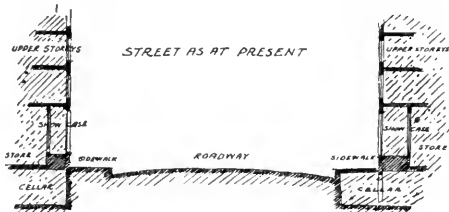
By W. W. Fitzpatrick

CHICAGO is contemplating widening LaSalle Street by cutting off the fronts of the buildings on one side of it back to the requisite width of roadway—and at the cost of millions. Other cities have done the same thing and are considering widening still more streets. We are extending elevated railway lines and making new or adding to old subways—all at appalling costs—in a scramble to provide for the congestion of traffic in our ever growing and overcrowded cities.

Here in Chicago, even if we do get a subway and perhaps two- and three-storied elevated lines, the vehicle and foot traffic will still exceed our present street capacity in the Loop. Most of that section's streets are narrow, and will continue to be uncomfortably crowded, especially at certain hours. But it is so easy to relieve much of that—no tearing down of buildings nor other super-costly and time-consuming construction, but just something that can be done almost over night, so to speak.

Let the city make suitable financial arrangement with the property owners on the over-traveled streets, such as Dearborn and Madison, and simply move the store fronts in a bit, say 16 feet or so, then widen the roadway to take in the present sidewalks, making room for three or four more lines of autos. The fronts of the buildings and their upper stories would remain unchanged, but the space from the front piers of the buildings to the new line of store fronts would be arcaded or covered sidewalks, with ceilings handsomely finished, and all attractively illuminated.

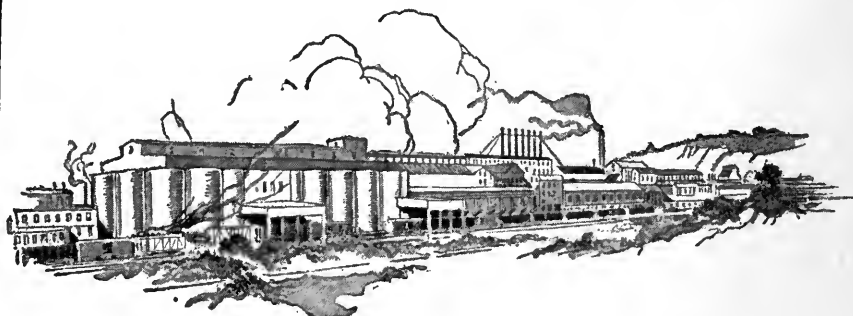
Most of the show-cases have artificial lights all day now, anyway, and certainly it permits of as fine a display of goods as does daylight. Covering the sidewalk is



INCREASING STREET WIDTH BY ARCHED SIDEWALKS

a splendid advantage—freedom from snow and ice in winter, a shelter from the elements always, cool walking in summer; it is not a make-shift expedient but a decided improvement as well as the sanest and least expensive way of accommodating traffic.

Many of the old European cities advertise and are proud of their cloistered or arcaded streets, and people go miles to promenade upon them. Let Chicago start it in the Loop, and, the country over, cities will follow the example, for it is obviously the thing to do.



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MOST of the country's construction projects, large and small, would quickly stop if you couldn't get cement.

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Last year the country used over 460,000,000 sacks of portland cement. Capacity to manufacture was nearly 600,000,000 sacks.

Cement cannot be made everywhere, because raw materials of the necessary chemical composition are not found in sufficient quantities everywhere.

It is now manufactured, however, in 27 states, and there are 117 plants—some one or more within easy shipping distance of nearly every part of the country.

Conservative estimates place the capital invested in the cement industry at \$300,000,000, and value of output for the last 5 years at \$860,000,000.

Capital requirements are large—turnover is slow—on an average less than 3 times in 5 years.

Providing an adequate cement supply has involved a good deal in costly experience.

159 cement plants have been built, most of them in the last 25 years—166 others went through some stage of construction or financing; only 117 have survived the financial, operating and marketing hazards of that period.

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Municipal and Civic Publications

Prices do not include postage unless so stated

Dublin of the Future.—By Patrick Abercrombie, M.A., A.R.I.B.A., Sydney Kelly, F.S.I., and Arthur Kelly. The University Press of Liverpool, and Hodder & Stoughton, Ltd., London. 1922. XVI + 58 quarto pp. Maps, views, diagrams. Boards, 21s.; paper, 17s. 6d.

The new Town Plan for Dublin, being the scheme awarded the first prize in the International Competition. Published as Volume One of the Publications of the Civic Institute of Ireland. The report of the Adjudicators—Professor Patrick Geddes, of Edinburgh; Charles J. McCarthy, City Architect of Dublin, and John Nolen, of Cambridge, Mass., on the competitive designs, is included in this volume. The prize-winning plan was originally prepared in 1914, and since then many changes have come to Dublin. This plan is therefore supplemented with many drawings subsequently prepared to explain the authors' recommendations, is reinforced by important data, and revised in accordance with the original framework. The main recommendations of the plan are: a new street center; the grouping of industrial areas at certain points; the building of new housing quarters at Crumlin and Cabra and relating them to the center by direct avenues; and the creation of a park system. Many of the minor proposals can easily become the early stages of a final scheme based upon the present comprehensive plan. The report is imposing, yet readable, and admirably conveys to the student of city planning the skill and beauty, the practical and suggestive merit of the prize-winning plan.

Studies on Building Height Limitations in Large Cities, with Special Reference to Conditions in Chicago.—Compiled by Charles M. Nichols. Published by the Chicago Real Estate Board Library. 1923. 299 pp. Illustrated. \$2.50.

Proceedings of an investigation of building height limitations conducted under the auspices of the Zoning Committee of the Chicago Real Estate Board. A book of great value to city planning commissions, zoning committees and city engineers. Presenting views and arguments of advocates and of opponents of lower building height limits, thus making it possible to view the subject with broad intelligence. This work of a subcommittee of nineteen citizens especially qualified to discuss the effect of high buildings on health, safety, and street congestion, covered six months of expert investigation and is said to be the most extensive and complete ever conducted in relation to this subject.

The Doncaster Regional Planning Scheme.—By Patrick Abercrombie, University of Liverpool, and T. H. Johnson, Doncaster. The University Press of Liverpool, Ltd., and Hodder & Stoughton, Ltd., London. 1922. XII + 93 quarto pp. Maps, views, diagrams. 10 shillings.

Containing also an appendix on Coal Subsidence, by Joseph Humble, Doncaster. This report covers eight local authorities and an area of about 169 square miles, with a population of 139,940, and involves the fundamental problems of coal mining and the consequent subsidence. The committee's proposals relate to the development of a number of satellite towns, functioning individually as complete entities, but all part of the Doncaster industrial region. No stringent measures are suggested. The portion of the report devoted to road and railway accessibility is particularly interesting. A most attractively presented report, well rewarding study.

The Traffic Problem of New York City.—By William P. Eno. A paper read before the Harvard Engineering Society, March 8, 1923. 8 typewritten pp. Reviewing plans suggested in the past which have been treated with indifference, and making a number of suggestions for dealing with the present situation. Advocating the standardization of general traffic regulations for the whole country and the entrusting of the scientific development of traffic regulation to trained highway traffic regulation engineers. (Apply to the Eno Foundation for Highway Traffic Regulation, Inc., 1771 N Street, Northwest, Washington, D. C.)

Steam Power.—By C. F. Hirshfeld and T. C. Bright, formerly Professor and Instructor, respectively, Department of Power Engineering, Sibley College, Cornell University. Second Edition. John Wiley & Sons, Inc., New York. 1922. 454 pp. \$3.25.

This well-known elementary text-book on the steam engine and its accessories, although primarily intended for colleges and higher technical schools, contains an essential theory of the subject, so written that a non-technical man can get a great deal out of it. The second edition contains a chapter on "Performance of Steam Power Equipment," which greatly improves the book as to completeness.

The Charity Organization Movement in the United States.—Frank Dekker Watson, Ph.D., Department of Sociology and Social Work, Haverford College. The Macmillan Company, New York. 1922. X + 560 pp. \$4.00.

A history of the efforts abroad and in the United States for dealing with poverty, which led to the charity organization movement, and a discussion of the principles and methods of the movement and its development up to the present time. The valuable chapters on "Tests of Efficiency" and "Prejudices and Criticisms" are followed by one on "The Philosophy of Charity Organization," which expresses the passionate concern that our neighbors shall have from not just dealing only, but the electric touch of human sympathy.

Participation of the Federal Government in Education.—Majority report of Special Committee on Education of the Chamber of Commerce of the United States. November 20, 1922. 110 pp. Considering the question: Shall the states continue to maintain and be responsible for the public schools of the country? Shall the National Government take over the support and control of the schools? Shall there be a divided support and control, partly vested in the National Government and partly vested in the states? (Apply to James J. Storrow, Chairman of the Committee, 44 State Street, Boston, Mass.)

A Model State Constitution.—Prepared by the Committee on State Government of the National Municipal League. With the exception of the four sections on public welfare, this document has been approved by the membership of the League. The purpose of the model constitution is to suggest principles and to arouse discussion. (Apply to the National Municipal League, 261 Broadway, New York, N. Y.)

The Ten Book, or How to Keep Well.—Issued by the Maine Public Health Association, with the cooperation of various organizations, newspapers and individuals in Maine, and of the Metropolitan Life Insurance Company. Ten facts are given by health experts on each of ten subjects vital to health promotion: The Family Physician; The Public Health Nurse; Social Hygiene; Mental Hygiene; Child Hygiene; Builders of Main; Your Body; Your Eyes; Your Teeth; Tuberculosis. Definite, direct information that helps in winning health, happiness, and prosperity. (Send 2c. to the Maine Public Health Association, Augusta, Maine.)

The Part-Time School for the Working Youth.—Formulation of the theory, principles, problems, and practises involved in the New York State program of part-time or continuation education. 15 pp. Illustrated. Prepared at a conference held in Ithaca, August 2, 1922, by a committee of specialists on industrial education and part-time schools. University of the State of New York Bulletin No. 756, April 15, 1922. (Apply to the University, Albany, N. Y.)

Proceedings of the Fiftieth Annual Convention of the International Association of Fire Engineers.—The convention was held at San Francisco, Calif., August 15-19, 1922. 268 pp. Illustrated. Reported by Ernest Mott, San Francisco. Published by the Secretary of the Association, James J. Mulcahey, Chief, Yonkers, N. Y. (Apply to publisher.)

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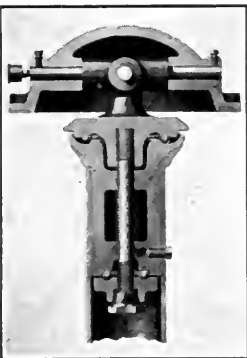
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Report on Sewage Disposal for the City of Trenton, N. J.—By George A. Johnson, Consulting Engineer, 1922. 111 pp. Many tables. The portion of the original report here presented includes information under the following chapter heads: Historical; Population; Temperatures; Sewage Flows; Composition of Trenton Sewage; Trade Wastes; Flow of the Delaware River; Composition of Delaware River Water; Sewage Disposal Plant Site; Sewage Treatment Processes; Allentown Test of the Direct Oxidation Process of Sewage Treatment. (Apply to George A. Johnson, 150 Nassau Street, New York, N. Y.)

The Direct Primary.—The March, 1923, issue of "The Annals," III + 286 pp. Containing articles by authorities under the general head and under the following divisions of the subject: Special Features of the Direct Primary; The Operation of the Direct Primary in Particular States; and Digest of Primary Election Laws. Also the Book Department and the Report of the Board of Directors of the American Academy of Political and Social Science, year ending December 31, 1922. The editor in charge of this volume is J. T. Salter, Instructor in Political Science, University of Pennsylvania. Price \$1. (Apply to the American Academy of Political and Social Science, 39th Street and Woodland Avenue, Philadelphia, Pa.)

Regional Planning Theory—A Reply to the British Challenge.—By Arthur O. Comey, Fellow, American Society of Landscape Architects. 1923. 18 quarto pp. Diagrams. Dealing with the British garden city theory as exemplified in Letchworth and Welwyn, and its flaws as developed with time and growth, and presenting the author's ideas regarding a more workable theory—regional planning. (Apply to Mr. Comey, Abbot Building, Harvard Square, Cambridge, Mass.)

Kalispell, Mont.—Ninth Annual Report of the Water Department for the year ending December 31, 1922. (Apply to W. H. Lawrence, Superintendent.)

The Commonwealth Fund.—Fourth Annual Report, for the years 1921-1922. January, 1923. 55 pp. The appropriations voted during this period are under the heads of Child Welfare, Foreign Relief, Educational and Legal Research, Health, and Special Miscellaneous Grants. The purposes of the Fund in relation to the various divisions of its work, and the way in which the work has been carried on are told in an interesting way. (Apply to The Commonwealth Fund, 1 East 57th Street, New York, N. Y.)

Los Angeles, Calif.—13th Annual Report of Board of Public Utilities, July 1, 1921, June 30, 1922. (Apply to H. Z. Osborne, Jr., Chief Engineer of the Board.)

Forsokshuser.—Report (in Norwegian) of Professor Andr. Bugge on his "experimental houses" and the experiments with building materials which he, with state aid, has been carrying on for the last three years in Trondhjem, Norway. 1922. Quarto. 79 pp. Many drawings and diagrams. An English edition is now being prepared. (Apply to Norsk Forening for Boligreform, Kristiania, Norway.)

No. 2 Twice 55 Community Songs—The Green Book.—A new collection containing no songs that appear in its companion issued in 1919. It aims to serve as a bridge from the community "sing" to the choral society, and it includes choral material of high grade and simple songs of many types and for many different occasions. Only voice parts are given in this edition. The "Complete Edition" includes full accompaniments, and orchestral parts can be furnished by the publishers. List price 25 cents; net price in quantity direct from publishers, 20 cents. (Apply to the publishers, C. C. Birchard & Company, Boston, Mass.)

Special Report of the [Massachusetts] Department of Public Health Relative to the Condition of North River in the Cities of Salem and Peabody and the Measures Necessary for Improving the Sewerage System of Said Cities Under Chapter 40, Resolves of 1922.—January, 1923. House Document No. 1175. 59 pp. 1 photograph. Maps, diagrams, tables. (Apply to X. H. Goodnough, Chief Engineer, State Department of Health, Room 141, State House, Boston.)

Tentative Report and a Proposed Zoning Ordinance for the City of Chicago.—January 5, 1923. Quarto. 36 pp. Views and diagrams. Fully explaining the need of zoning, and the features of the "reasonable and comprehensive" zoning ordinance which was adopted by the Chicago Zoning Commission on December 8, 1922. (Apply to the Chicago Zoning Commission, 163 West Washington Street, Chicago, Ill.)

State Regulations of Motor Vehicle Common Carriers; State Restrictions on Motor Vehicle Operation Special Taxation for Motor Vehicles.—Three pamphlet issued by the Motor Vehicle Conference Committee, 366 Madison Avenue, New York, N. Y., representing the American Automobile Association, the Motor and Accessory Manufacturers' Association, the National Automobile Chamber of Commerce, the National Automobile Dealers' Association, and the Rubber Association of America. January 1, 1923. 12, 16, and 24 pp. respectively. (Apply to the Committee, address above.)

Salaries of High School Principals and City Superintendents of Schools in Wisconsin Cities.—Information Report No. 28 of the Municipal Information Bureau, University Extension Division, the University of Wisconsin. January, 1923. 8 mimeographed pp. Data compiled at the request of a Wisconsin mayor, from the official reports of high school principals for the year 1921-22. (Apply to the Bureau, as above, Madison, Wis.)

The Modern Hospital in the City Plan.—By Philip W. Foster, city planner, Cambridge, Mass. In the March, 1923, issue of "The Modern Hospital," 5 quarto pp. Illustrated. "The location and establishment of a modern hospital in any city offer great possibilities for increased beauty to the community." (Apply to "The Modern Hospital," 22 East Ontario Street, Chicago, Ill.)

Annual Report of the Superintendent of Lamps and Lighting to the Mayor and City Council of Baltimore for the Fiscal Year Ending December 31, 1921. (Apply to John J. Hanson, Superintendent.)

The City and County of Philadelphia—A Discussion of Their Legal Relations.—By Clarence G. Shenton of the Philadelphia Bar, a member of the staff of the Bureau of Municipal Research of Philadelphia. February, 1923. 95 pp. The city and county of Philadelphia have the same boundaries, and the report discusses the history of efforts to consolidate the two governments. A limited number of copies available free. (Apply to the Bureau, 1418 Chestnut Street, Philadelphia, Pa.)

Town Planning and Development in the Federated Malay States.—Preliminary report and general survey with recommendations to the Acting Under Secretary to the Government of the Federated Malay States, by Charles C. Reade, Government Town Planner. Dealing with developments up to April, 1922; including a study of existing towns and their problems in relation to town planning, and outlining the detailed works upon which the Government Town Planner is engaged. 30 large pp. (Apply to Mr. Reade, at the Government Buildings, Kuala Lumpur, Federated Malay States.)

The Direct Primary—With Special Reference to the State of Maine.—By Orren Chalmers Hornell, Ph. D. Professor of Government, Bowdoin College, Brunswick, Maine. Bowdoin College Bulletin No. 123, December 1922. Municipal Research Series No. 4. Considering in an unprejudiced manner the history and working of the direct primary law in Maine and other states. Facts, based on careful investigation and statistics rather than a plea for the retention or the rejection of the law. A limited number of copies available at 50 cents per copy. (Apply to The Bureau for Research in Municipal Government, Bowdoin College, Brunswick, Maine.)

Toledo's Non-Partisan Movement.—By Wendell F. Johnson, M. A. 1922. 72 pp. Showing what conditions gave rise to the non-partisan movement in Toledo; what the character of that movement has been; what it has accomplished; and wherein it has failed. Based largely on current newspaper accounts of the events narrated, supplemented by interviews with participants in or observers of the movement. (Apply to author, Toledo, Ohio.)

Proposed Charter of the City of New York (1923).—Approved by the New York Charter Commission on March 5, 1923. 168 pp. (Apply to Howard Lee McBain, Secretary of the Commission, New York, N. Y.)

The Making of Topographical Maps of Cities and Towns, the First Step in Town Planning.—By Douglas H. Nelles, D. L. S., M. E. I. C., Supervisor of Topography, Geodetic Survey of Canada. 1921. Publication No. 9, Geodetic Survey of Canada. 40 pp. Maps, tables, diagrams. This publication shows the necessity for topographical maps and describes the different operations, giving a fair amount of detail as to the accuracy required. (Apply to Noel Ogilvie, Superintendent, Geodetic Survey of Canada, Ottawa, Canada.)



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Have you a motorcycle squad? The experience of 1100 cities, towns and counties proves that the Harley-Davidson-mounted policeman is a trusty safeguard against motorized crime. His speed, his mobility (the wide territory he can patrol), give him an efficiency unequalled by a squad of officers on foot.

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MILWAUKEE, WISCONSIN

How well is your
community pro-
tected ? ? ? ?
USE YOUR INFLUENCE

Harley-Davidson

The Motorcycle

Methods, Materials and Appliances

News for City and County Engineers, City Managers, Water-Works Superintendents, City Controllers, Park Superintendents, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

Interchangeable Tank and Body Units for Trucks

Many cities are using light-weight trucks for hauling services for several departments. The Heil Company, Milwaukee, Wis., has made a study of these needs and provided a sprinkler tank and also an ash and rubbish body which are interchangeable for mounting on a Ford chassis.

The sprinkler tank is so designed that it can be easily removed from the chassis with a few minutes' labor. It is held in place with U-bolts, which are furnished with the equipment. As the tank is removable, it may be replaced with an ash body, so that the chassis may be used by another department. The sprinkler tank holds 550 gallons and is furnished with a manhole for cleaning-out purposes, and a 2½-inch swivel connection for filling. The outlet is 4½ inches by 6½ inches in diameter and terminates in two 4-inch hose connections to the sprinkler heads. These heads have a radius of 18 feet and are controlled by levers bolted in place alongside the emergency lever in the cab of the truck. The tank is fitted with longitudinal and transverse surge plates so that the water is held in check.

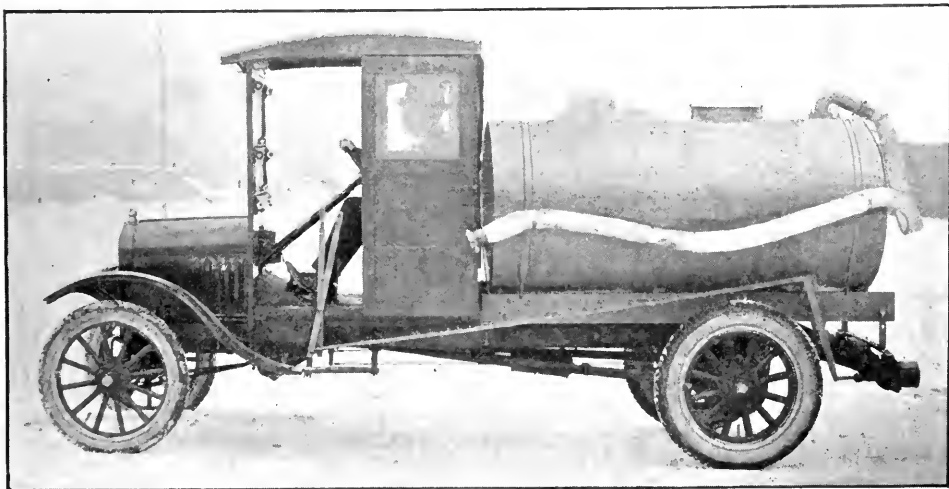
The ash and rubbish body has a capacity of 60 cubic feet. It is fitted with hinged sides, which are held in place with special lugs. The over-all height of the body is 28 inches. The sides are hinged 18 inches from the bottom, so that when the upper section is turned down,

the ashes, cinders and rubbish can be easily dumped over the sides. The tail-gate is double-acting and can be suspended level with the floor of the body. The body is equipped with the new Heil hand hoist, which gives a dumping angle of 55 degrees. This is sufficient to dump out the stickiest kind of material. The longitudinal seam of the body is welded so that it is water-tight.

A Steel Bracket for Street Signs

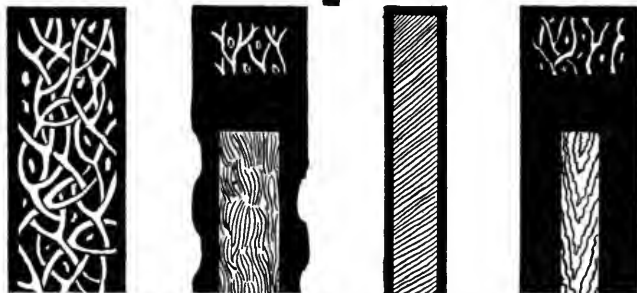
In order to have street signs entirely satisfactory they must be mounted in brackets which will withstand the ravages of the weather and the severe vibrations to which they are constantly subjected. The brackets of Lyle Signs, 171 27th Avenue S. E., Minneapolis, Minn., have been developed after many years of experimental research with various types of materials. This company has found that pressed steel is especially adaptable for this particular purpose, because it can be drawn to exact dimensions and all parts can be made absolutely interchangeable. The company claims that the usual cast iron bracket is subject to breaking, especially in cold weather. The steel bracket, being practically unbreakable, is well adapted to the service it is expected to render. While the cost of the new bracket is a little more than that of castings, it is said to be neater in appearance and to last much longer.

The cap bracket consists of a pressed steel



A TANK FOR MOUNTING ON FORD TRUCKS FOR STREET SPRINKLING

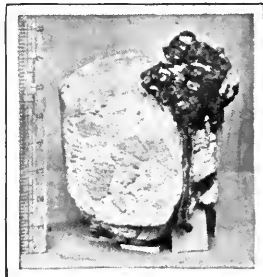
Servicised Expansion Joints



MONITORS OF THE ROAD

Old principles of expansion joint provide fillers of solid asphaltic content or impregnated fibre and asphalt in an elastic mass. ¶ The fundamental purpose of the filler is to re-occupy the space left by two contracting slabs. ¶ Solid asphaltic or impregnated fibrous materials contract, concrete slabs likewise contract on cooling. ¶ Three contracting bodies cannot occupy the same space as when expanded. Servicised Joints *expand* when the concrete slabs contract. ¶ This is the key to a permanent waterproof joint; a correct answer to the problem of expansion between two contracting bodies. Unimpregnated cellular fibrous matter in Servicised Joints brings about this re-expansion after compression is relieved.

Trapped Under Compression:
The print to the right is an example of oozing under compression. Due to the hard asphalt surfacing over the concrete base, the traffic could not carry the surplus away because it was locked in between the asphalt surfacing and base. The force was great enough, however, to form bulges in the hard asphalt surface.



A Bituminous and Impregnated Fibre or Elastic Mass: No better proof of indiscriminate oozing. No better illustration of the need of expansion joint of the proper kind. The action in this instance resembles that of paste in a tube being squeezed with one side open. Action of this kind causes tremendous waste, without resulting in good. Servicised Joints will prevent this.

Write Us About Your
Expansion Joint
Problems

Servicised Products Co.
First National Bank Bldg.
CHICAGO



TYPE B
75% Bitumen
25% Cellular Fibre



TYPE D
Self-Expanding
Non-Raising



TYPE C
Felt Center—Coated
Sides—Sidewalk Joint



TYPE AA
3/16 Veneer Core

Four Types of Servicised Expansion Joints



in Which the Oozing Tendency Is Controlled

Servicise the Crevice and Save the Road

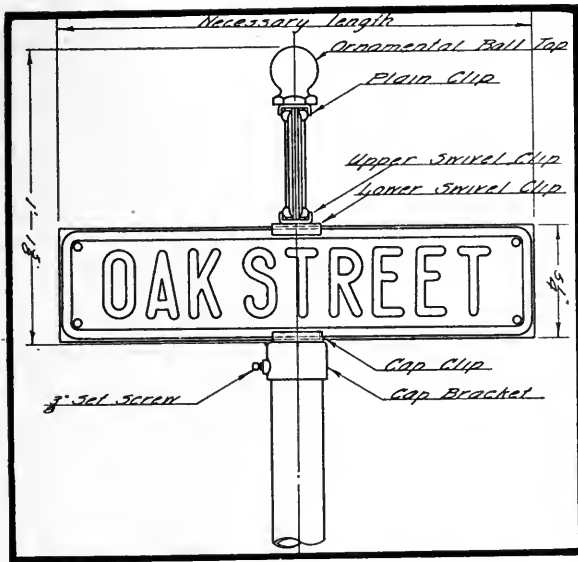


DIAGRAM OF STREET SIGN BRACKET

plate drawn down to a cup-shaped form. This bracket is inverted over the pipe-standard and is fitted with three case-hardened set screws, which hold it securely in place. A $\frac{5}{8}$ -inch bolt passes through the cap bracket. Before the bolt is inserted, a heavy washer is slipped on next to the head. This gives the bolt a fulcrum point well down into the pipe, since this washer is made to exactly fit the inside of the pipe. The spacer takes up the play between the washer and the top of the cap bracket, so that when the bolt is tightened the sign becomes absolutely rigid. The cap clip is constructed similarly to the upper swivel clip and has projections which fit into recesses of the cap bracket. This insures a permanent position of the lower street sign so that it will remain at the angle in which it is originally installed. The lower swivel clip consists of a series of concentric circles which are pressed into the face of the plate, while the upper swivel clip consists of projections so designed that they will fit into the recesses of the lower clip at any angle desired. This is an important feature, because it is frequently necessary to fit signs at various angles at intersections of streets. Every town has many streets that are not at right angles and it is the purpose of this swivel assembly to allow the sign to be rigidly held at such an angle that the signs will run parallel with the streets which they designate.

These brackets have been installed in Minneapolis, St. Paul, and Faribault, Minn.; East St. Louis, Ill.; Lexington, Ky.; Benton Harbor, Mich.; Newport News, Va., and several other cities.

Curing Concrete Roads

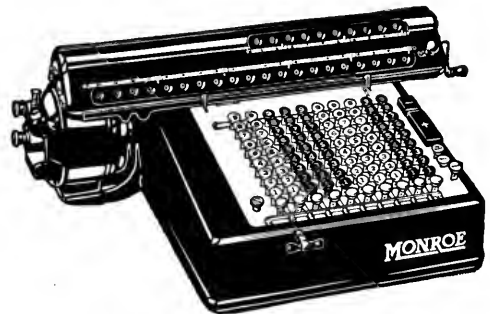
The Dow Chemical Co., Midland, Mich., will send free on application a practical book on the use of calcium chloride flakes in the curing of concrete roads.

An Automatic Calculating Machine

The new portable automatic model calculating machine recently brought out by the Monroe Calculating Machine Company, Orange, N. J., can be used on any desk or stand and is electrically operated. It retains the visibility of operation and wide applicability of the standard Monroe for use in city and county offices, and is built on the same mechanical principles, but has the distinct advantage of electric operation.

There are two operating bars at the right of the keyboard; the plus bar has only to be touched to add, and the minus bar to subtract. For rapid addition, the flexible keyboard with its automatic register and control and with an instantaneous dial clear-out makes this probably the speediest full keyboard set-up adding machine yet introduced. In case the supply of current is shut off for any reason, the Monroe Automatic can be used as a hand-operated machine by the ready insertion of the operating crank. An ingenious mechanical control prevents locking or damage to the machine and also safeguards it against operating abuse.

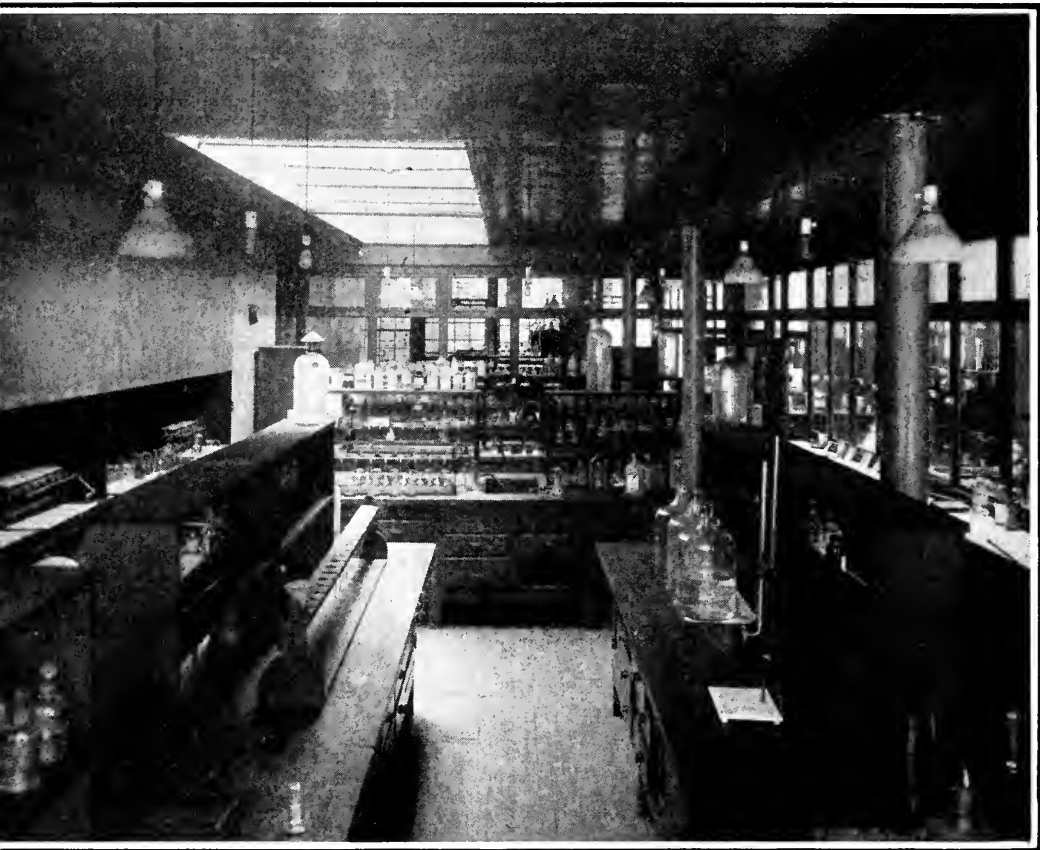
This machine, equipped with a light, compact motor located at the left of the machine under the overhang of the carriage, weighs only slightly more than the hand-operated machine. It clears itself almost instantly after the result is obtained, thus being always ready for the operator's next move.



A NEW AUTOMATIC MACHINE TO SPEED CALCULATING

Middle-West Engineers Open Pacific Coast Office

The Burns & McDonnell Engineering Company, Interstate Building, Kansas City, Mo., specialists in municipal engineering problems, have opened a new office at Los Angeles, Calif., in the Marsh-Strong Building, with Chester A. Smith, a member of the firm, in charge. This office is now handling the engineering work on the half-million-dollar Flagstaff, Ariz., water-supply project and the new water-supply and filtration plant for Lewiston, Idaho.



Interior Chemical Laboratory, Pittsburgh Testing Laboratory, Pittsburgh, Pa.

A COMPLETE AND ACCURATE INSPECTION SERVICE FOR ALL MUNICIPALITIES—

Including

bacteriological examinations or chemical analyses of water for both domestic and industrial purposes, progressive inspection of cast iron and steel pipe: brick, wood block, concrete, and bituminous paving, bridges, pumping plants and municipal buildings. Cement testing a specialty.

All certificates from this company are recognized as authoritative by municipal and state officials.

Complete bulletins on any of the above subjects on request.

PITTSBURGH TESTING LABORATORY

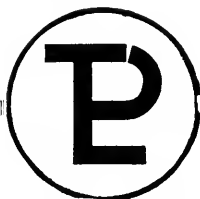
Inspecting Engineers and Chemists.

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PENNSYLVANIA

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DETROIT



LITTLE ROCK
BUFFALO
CHICAGO

CINCINNATI
BIRMINGHAM
DALLAS

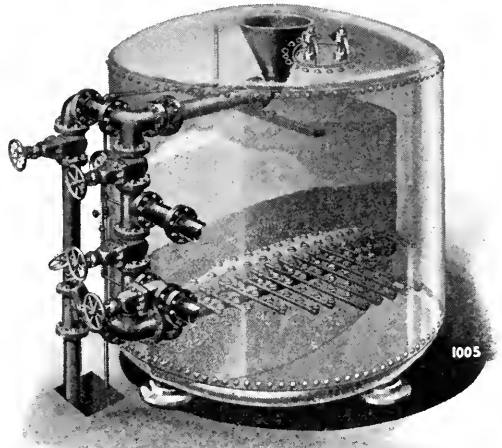
The Design and Construction of Swimming Pools

The most common type of swimming pool is the interior pool in clubs, schools, and Y. M. C. A. buildings, used for athletic contests or in connection with gymnasium exercises. Besides the ordinary pools, special pools are built for sports, such as water-polo or water-basket-ball. Outside pools for swimming or wading during the warm season are quite common.

Interior pools are generally built of reinforced concrete or steel and must be water-tight. The steel tank is used where there is excessive ground water, as when the pool is located in basements or placed in excavation. The steel shell is used merely as a lining. Many pools are now placed on the upper floors of buildings, and the design must be such that adequate support is provided when the pool is full. The advantage of placing a pool in this location is that light and air are secured, and the basement is left free for the power-plant and the purifying and heating apparatus.

The minimum dimensions of a swimming pool as described by the Intercollegiate Rules for Athletic Contests and adopted as standard for Y. M. C. A. buildings are: width, 20 feet; length, 60 feet. Other sizes measure in multiples of 5 feet of width and 15 feet of length. The depth of water should not be less than 3 feet at the shallow end and 7 feet at the deep end. The most serviceable shape is the so-called spoon-shaped bottom. This has a gradual slope to the middle of the length, after which it is sloped both ways to give a maximum depth at a point 15 feet from the deep end of the pool. The majority of the pools are not over 7½ feet deep, but for diving contests a depth of 8 to 10 feet is found advisable.

The filtration system developed for swimming pools by the Graver Corporation, East Chicago, Ind., consists of a steel pressure cylinder, which the water enters by means of a tee at the center of the vertical pipe shown in the illustration. The water then passes upward through a valve into the shell of the filter near the top. Water is distributed above



PHANTOM VIEW OF PRESSURE FILTER FOR SWIMMING POOL

the top of the filter chamber by means of a large upturned diffusing tunnel, and then passes downward through the filtering medium to the manifold collecting system. The filtering medium consists of crushed quartz carefully graded, screened and washed. The edges are sharp, forming small interstices between the grains. The quartz is placed above two layers of gravel, one medium fine immediately above the manifold, and the other somewhat finer. The operation of the filter is exceedingly easy. When the filter is washed to remove the accumulated suspended matter, the water is forced under pressure into the manifold pipes, upward through the filtering material, overflowing the surface of the bed, and is then conducted off to waste through the top overflow funnel. The method of wash is the so-called high-velocity or high-water-rate method. No other means of agitation is necessary.

The Graver instantaneous water heating system consists of brass tubes, 1¼ inches outside

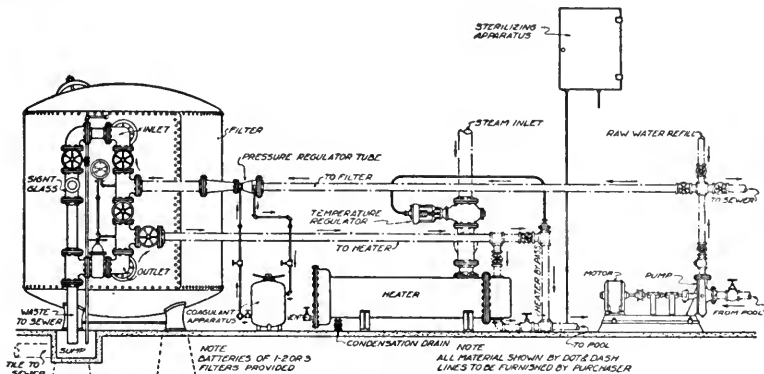
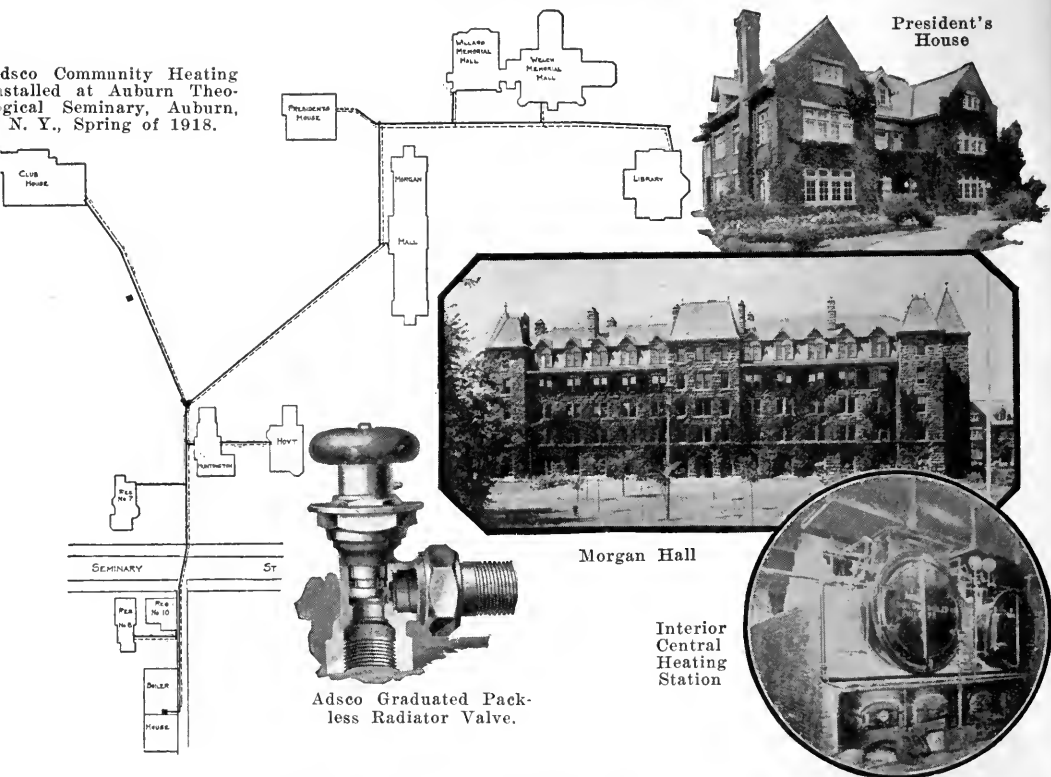


DIAGRAM SHOWING THE ARRANGEMENT OF HEATER, FILTERS AND PUMPS IN A GRAVER REFILTRING OR RECIRCULATING SYSTEM FOR SWIMMING POOLS

Adsko Community Heating installed at Auburn Theological Seminary, Auburn, N. Y., Spring of 1918.



Auburn Theological Seminary Enjoys Adsko Community Heating

For many years Auburn Theological Seminary had been heating its eleven buildings with individual systems. This meant fire hazard in each building, waste of fuel, and unnecessary expense of operation.

Dr. Stewart, President, realizing the discomfort and expense of such antiquated heating methods invited our engineers to suggest the most modern way to take care of this heating problem. The result was our design and installation in the spring

of 1918 of 1447 feet of underground mains distributing steam from a central station plant with not only the economy of one boiler in place of eleven heating systems, but also the comfort of more even temperatures, better controlled in each of the eleven buildings.

Those in control of similar groups of buildings are invited to follow Dr. Stewart's example and avail themselves of our forty years' engineering and contracting experience in Community Heating.

Write for our interesting booklet on Adsko Community Heating, Bulletin No. 20-AC. For individual buildings, ask for Bulletin No. 158-AC, on Adsko Heating for use with any type of boiler.

AMERICAN DISTRICT STEAM COMPANY

GENERAL OFFICES AND WORKS

NORTH TONAWANDA, N.Y.

OFFICES:

NEW YORK

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PHILADELPHIA

SEATTLE

ADSCO HEATING

When writing to Advertisers please mention THE AMERICAN CITY.

diameter, surrounded with steam. The tubes are spaced as closely together as practical, and are contained in a shell just large enough to hold them. This method of heating the water on its way to the pool is economical because no storage is provided or needed and the water heats very rapidly in passing through the inside of the tubes at high velocity.

Choosing Street Lighting Globes

The choice of a proper globe for a street lighting unit has a great deal to do with the efficiency and cost of the system. The Macbeth-Evans Glass Company, Chamber of Commerce Building, Pittsburgh, Pa., has developed types of street globes to suit practically all street lighting conditions.

Macbeth-Alba globes, which, it is claimed, have been used on 90 per cent of the street lighting systems of the world, stimulated the research department of the company to greater effort toward securing a glass that would satisfy more completely the requirements of an ideal street lighting installation. This research has produced the Macbeth-Monax globe, which has an average absorption of 15 per cent, giving remarkable diffusion. The intensely brilliant lamp filament of a modern high-powered light

source is almost impossible to locate in any one of these globes.

The most expensive method of buying globes is to purchase them by the dozen. The truly economical way is to purchase globes by the year. The cheapest globe is often the most expensive because it lacks mechanical strength. The high-powered lamps commonly used to-day generate great heat, which is radiated in the enclosing globe. On a cold, stormy night, the heat on the inside of the globe and the cold on the outside cause a strain which will crack a globe of inferior quality. In the manufacture of Macbeth-Monax globes, careful annealing or tempering gives them the mechanical strength to withstand severe changes in temperature as well as the destructive effect of rain, hail, snow or wind. These globes also retain their smooth, polished surfaces almost indefinitely, making repeated scrubblings unnecessary when cleaning the globe.

Modern concentrated filament lamps have a higher proportion of light of short wave lengths and considerably less of the yellow, orange and red, thus approaching more nearly to daylight. It is claimed that Macbeth-Monax enclosed globes give the same spectral character as that of the lamp; that is, the same proportions of blue, red and green are transmitted to the eye that are given forth by the lamp.



MONAX GLOBES ON LIGHTING STANDARDS, ORANGE GROVE AVENUE, PASADENA, CALIF.

New Holt Manager at Omaha

The Holt Manufacturing Company, Peoria, Ill., has announced the appointment of W. G. Crawford as District Manager in charge of the Omaha branch and territory, comprising the states of Iowa and Nebraska and the southern part of South Dakota. The Omaha branch has been moved from 242 Farnam Street to new quarters at 708-712 Tenth Street. Mr. Crawford has previously been in charge of the Holt branch at Des Moines and is now in charge of the enlarged and consolidated territory. The Des Moines station will be continued, with George Doering in charge. The consolidation of the Iowa-Nebraska territory, with headquarters at Omaha, effects a substantial increase in the service and sales facilities, with new and enlarged quarters in the Terminal Warehouse Building, and a stock of Caterpillar tractors and accessories will be carried.

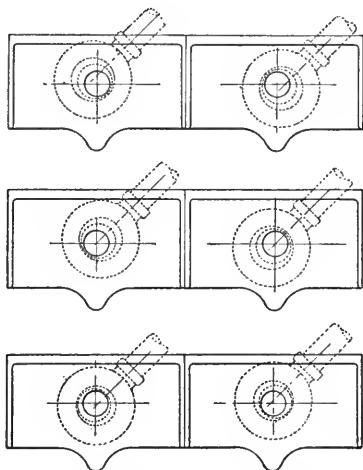
THE VALUE OF MANUFACTURERS' CATALOGS

The attention of readers of THE AMERICAN CITY is called to pages 4 and 6 at the front of this issue. The catalogs listed are selected with care to serve the interest and needs of our readers. This literature contains practical suggestions for various departments of municipal work.



Note the double eccentric bushings. This is series 2006-A—Josam Double Drainage Trap and Drain for Shower or Urinal Receptors.

When the "Roughing In" Is Out



Above are shown a number of positions of the Josam Trap and Drain as "roughed-in" relative to the drain openings in the urinal receptor. A variation of $1\frac{1}{2}$ inches can be readily compensated by installing the Josam 2006-A or our 3001 series which is the same type without trap.

IN public comfort stations, public buildings and all places where batteries of urinals are installed, a slight irregularity in the first stall set will throw off the "roughings" for the second stall. These irregularities become more pronounced with each additional stall and to correct the "roughing-in" costs money.

The Josam Double Drainage Urinal Trap and Drain with adjustable eccentric bushings solves the problem. It meets distortions or irregularities in receptors when they will not coincide with "roughed-in" connections and assures a perfect fit. See diagram at left.

Send for Catalog F—it describes in detail the complete Josam line.

The Josam Manufacturing Co.

Factories: 2nd & Canal Road MICHIGAN CITY, IND.

Branches: New York, Cleveland, Chicago, St. Louis, Detroit, Seattle, San Francisco, Los Angeles, Washington, D. C., Boston, Buffalo, Albany, Atlanta. Canada: Montreal, Toronto.

*"There are no Substitutes
for Josam Drains"*

Josam
TRADE MARK REG.
DRAINS
STANDARD
OF AMERICA

Reports on Diesel Engine Operations

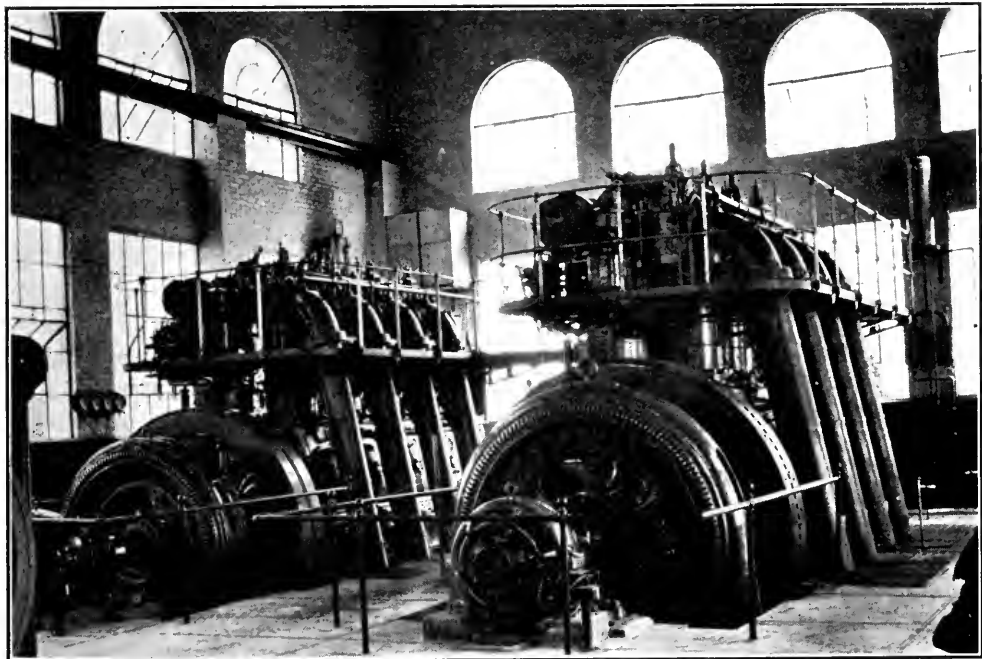
Recently a Louisiana city was considering an installation of Diesel engines made by Busch-Sulzer Bros. Diesel Engine Company, St. Louis, Mo., and in order to secure information which might be helpful in deciding on the type of engine to install, letters were sent to a number of cities operating Diesel engines, asking for their experience. We take pleasure in abstracting a number of these letters, containing information which may be helpful to readers of THE AMERICAN CITY.

S. E. Folk, Superintendent, Board of Public Affairs, Bryan, Ohio, reports that in 1907 they installed two 225-horsepower Diesel engines. In 1912, one 450-horsepower engine was added, and another 520-horsepower engine in 1919. These are used in the electric light and water-works plant with entire satisfaction. In 1920, the cylinders on the two 225-horsepower engines were rebored, new pistons put in and a few bearings rebabbited. The engines are now running with the same reliability and satisfaction as when new. Repairs on these engines have been very low.

A. V. Youens, City Electrician, Palo Alto, Calif., reports that they have used several types of fuel oil engines, and in 1920 purchased a 750-horsepower Busch-Sulzer vertical two-cycle Diesel engine. In the larger sizes, the tendency is toward the two-cycle design, and up to 500-horsepower, 4-cycle engines seem to be preferable. While the 4-cycle machine is

somewhat more efficient in fuel economy, the high total pressures become a problem; as the cylinders increase in size with the larger engines, increasing the number of cylinders to keep them small would lead to complications. Mr. Youens states that they are thoroughly satisfied with Diesel engine operation, and the operators, the same men who operated the earlier steam plant, greatly prefer the Diesel to the steam-driven plant. In fuel economy, the Diesel engine in small sizes will beat the most refined steam plants by about 2 to 1, and the more refined the steam plant, the greater the difference in simplicity, favoring the Diesel engine.

Homer I. Steffa, Mechanical Engineer for the Sanitary District of Chicago, reports that four Busch-Sulzer engines, each of 750-horsepower, direct-connected to 500 kilowatt generators, are installed in the Sanitary District plant, making the total plant capacity 3,000 horsepower or 2,000 kilowatts. The Diesel engines are operated in parallel with a hydro-electric plant of 36,000 horsepower about 42 miles away and a steam-turbo generating plant of 4,000 kilowatts about 15 miles away. The primary purpose of the Diesel engine plant is to furnish stand-by power for sewage and storm water pumping, but because of trouble at both the hydro-electric and the steam turbine plant, the Diesel plant has been in practically continuous operation at full capacity since June 16, 1922. They have experienced no engine trouble, and the plant delivers about 14 kilowatt hours per gallon of fuel oil used.



AN INSTALLATION OF BUSCH-SULZER DIESEL ENGINES IN DUNCAN, OKLA.

This installation consists of one 365-b.h.p., 225-r.p.m., 4-cylinder, 4-cycle, type B engine, direct-connected to a 312-kv.-amp. General Electric generator, and one 520-b.h.p., 200-r.p.m., 4-cylinder, 4-cycle, type B Diesel engine, direct-connected to a 450-kv.-amp. General Electric generator

TURTLE BACK SILENT TRAFFIC OFFICER

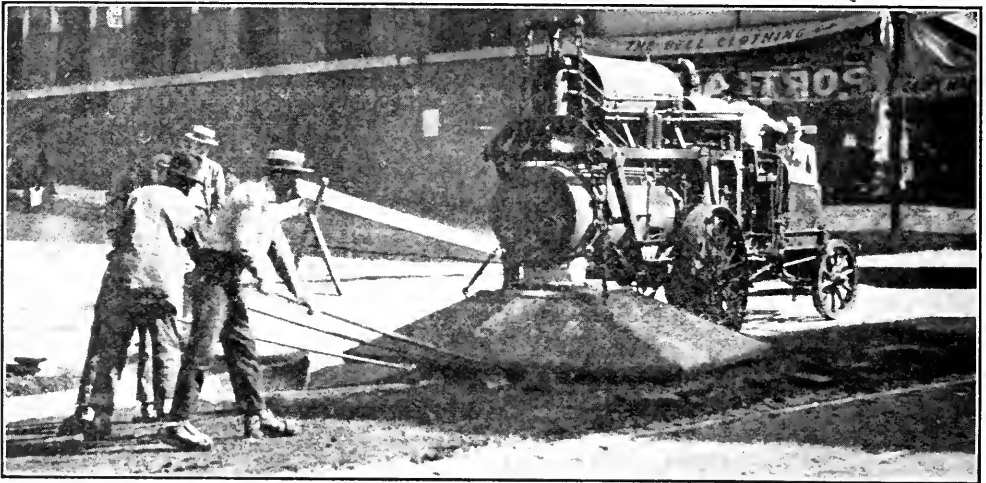


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Safety Islands Bridge Approaches
Sharp or Narrow Turns
Intersections with or without tracks
Indispensable in Heavy Traffic
Write for Special Offer

UNION IRON PRODUCTS CO. EAST CHICAGO INDIANA



MAKE BETTER ASPHALT STREET REPAIRS



The Improved Equitable Asphalt Heater Softens 1500 Square Yards a Day

Proper bonding of old and new asphalt is made possible by this fool proof machine which requires hot water to operate. The heating hood slides on the ground saving time and heat. The machine heats 45 square feet of pavement in 1 to 2 minutes and moves quickly ahead. Send for our new prices and specifications.

THE EQUITABLE ASPHALT MAINTENANCE COMPANY
1901 Campbell Street
Kansas City, Mo.



A STANDARD of QUALITY

Enterprise iron fencing for all municipal needs has been recognized as the standard for thirty-eight years

Catalog No 22C tells the Whole Story

ENTERPRISE IRON WORKS

1113 E. 24TH STREET, INDIANAPOLIS, IND.

According to C. Townsend, Superintendent, Water and Light Department, Perry, Okla., the city of Perry has two 180-horsepower Busch-Sulzer Diesel engines in service, driving 175-kilovolt-ampere generators. He states that the engines run smoothly and give no trouble. They are using about 200 to 300 gallons of fuel oil, depending on the load, and from 3 to 5 quarts of engine oil for the 24-hour day on both units, or 100 to 150 gallons of fuel oil on one unit, and 1½ quarts of engine oil per unit.

Hon. Charles Lauve, Mayor, Franklin, La., reports that they have been operating two 120-horsepower Diesel engines, and in the latter part of 1922 installed a third unit of 250 horsepower. The 120-horsepower engines have been in operation a little over five years, giving almost perfect service, and costing about \$56 a year for up-keep.

N. A. Kunkel, Superintendent, Municipal Water and Light Department, Anadarko, Okla., reports that they have two Busch-Sulzer engines of 180 brake horsepower each. These engines have been in operation about 1½ years and so far have had no repairs. They use the engines as auxiliaries to water-power, so that they are not in operation the full time. They have generated 274,650 kilowatt hours since they have been installed. During October, 1922, when the engines were the most used, they generated 37,750 kilowatt hours, using 4,160 gallons of 26-88 gravity fuel oil.

R. W. Callaway, Superintendent, Water and Light Department, Newkirk, Okla., gives the following operating sheet for his plant, from October 1, 1921, to September 30, 1922.

| | FUEL OIL COST | LAMP OIL COST | LUB. OIL COST | MISCELLANEOUS | TOTAL COST |
|-----------|---------------|---------------|---------------|---------------|------------|
| OCTOBER | \$ 161.00 | \$417.75 | \$ 25.60 | \$25.10 | \$ 629.45 |
| NOVEMBER | 143.00 | 390.00 | 33.93 | 49.20 | 616.13 |
| DECEMBER | 153.00 | 390.00 | 25.66 | 28.10 | 596.76 |
| JANUARY | 149.50 | 390.00 | 25.34 | 33.65 | 598.49 |
| FEBRUARY | 128.00 | 462.00 | 23.94 | 64.00 | 677.94 |
| MARCH | 124.17 | 390.00 | 23.20 | 32.98 | 570.35 |
| APRIL | 128.00 | 390.00 | 20.30 | 33.20 | 571.50 |
| MAY | 128.50 | 390.00 | 24.94 | 13.10 | 556.54 |
| JUNE | 133.00 | 438.00 | 22.04 | 28.50 | 621.54 |
| JULY | 140.00 | 390.00 | 19.72 | 28.50 | 578.22 |
| AUGUST | 151.00 | 510.00 | 23.80 | 28.00 | 712.80 |
| SEPTEMBER | 151.00 | 390.00 | 23.94 | 28.00 | 594.94 |
| TOTALS | 1692.17 | 4947.75 | 292.41 | 392.33 | 7324.26 |

| | MAINTENANCE | EXTENSION | GENERAL | TOTAL EXPENSE | KW HRS PRODUCED | GROSS INCOME |
|-----------|-------------|-----------|-----------|---------------|-----------------|--------------|
| OCTOBER | \$ 50.02 | \$ 86.50 | \$ 513.96 | \$ 650.48 | 49,700 | \$ 3001.25 |
| NOVEMBER | 160.77 | 175.10 | 359.66 | 695.52 | 49,300 | 2652.33 |
| DECEMBER | 162.60 | 126.00 | 545.49 | 834.29 | 52,570 | 2342.29 |
| JANUARY | 178.92 | 234.55 | 443.01 | 856.48 | 50,890 | 2803.40 |
| FEBRUARY | 74.38 | 62.76 | 426.91 | 563.91 | 44,390 | 2377.53 |
| MARCH | 33.75 | 33.75 | 446.03 | 513.33 | 46,050 | 2022.91 |
| APRIL | 49.75 | 88.75 | 278.50 | 417.00 | 41,080 | 2356.52 |
| MAY | 51.15 | 44.75 | 240.00 | 335.90 | 42,500 | 2645.68 |
| JUNE | 67.50 | 55.50 | 339.00 | 462.00 | 45,975 | 2188.30 |
| JULY | 63.50 | 58.50 | 297.00 | 419.20 | 42,190 | 2153.01 |
| AUGUST | 158.14 | 63.75 | 1046.82 | 1268.82 | 47,320 | 3992.30 |
| SEPTEMBER | 93.50 | 265.00 | 810.30 | 1168.80 | 50,879 | 2722.33 |
| TOTALS | \$1144.18 | \$1294.71 | \$5746.34 | \$8187.43 | 563,004 | \$29862.86 |

| | | | |
|-----------------------------|--------|---------------------------------|--------------|
| Total Gallons Fuel Oil Used | 70,397 | Total Gross Income for the year | \$ 29,862.86 |
| " " Lub. Oil Used | 490 | " " Expenditures | \$ 15,511.69 |
| | | Gross Profits | \$14,351.17 |

Cost per KW HR at the Switchboard \$0.01309
Fuel Oil Cost \$1.00 per Barrel of 42 Gallons.



LaFRANCE SMOKE MASKS WHICH WERE SUCCESSFULLY TESTED BY THE NEW HAVEN FIRE DEPARTMENT

smoke masks. Under the supervision of Frank Blotchley, superintendent of motor apparatus, the masks were tested in a room in which were ammonia fumes, sulphur, and other materials forming gases so deadly that no human being could have survived their effect. Firemen wearing LaFrance masks made by the American-LaFrance Fire Engine Company, Inc., Elmira, N. Y., entered the room and remained for long periods. Chief Fancher was so pleased with the results of this test that he ordered 20 LaFrance masks, as illustrated, added to his equipment.

Dallas Sales Office Moved

The United States Cast Iron and Foundry Company has announced that its Dallas sales office has been moved from the Scollard Building to Room 617, Magnolia Building. This office is in charge of Thomas W. Hanlon, Southwestern Sales Agent.

New Smoke Masks for New Haven

Fire Chief Rufus R. Fancher, of the New Haven, Conn., Fire Department, recently conducted exhaustive tests of the merits of

Around the world on native lake asphalt



El Prado, the "Show Drive" of Havana, Cuba, built with Bermudez (Native-lake) Asphalt in 1914. Still in splendid condition.



London ✓
Lille, France ✓
Versailles, France ✓
Frankfurt, Germany ✓
Bombay, India ✓
Johannesburg, S. Africa ✓
Rio de Janeiro, Brazil ✓
San Paulo, Brazil ✓
Washington, D. C. ✓
Havana, Cuba ✓
Mar Del Plata, Argentine Republic ✓
Mercedes, Argentine Republic ✓

Pounded ten years by heavy automobile traffic—and **not a cent needed for repairs!** That's the record of Bermudez Asphalt on El Prado, Havana's fashionable thoroughfare.

Bermudez Asphalt is a nature-made, world-old, ages-seasoned bitumen—not a by-product of the coke oven or of petroleum distillation.

Exposed for centuries to the rigors of tropic heat and tropic storms, Bermudez has weather and wear resistance built into it—is seasoned and toughened for long-lasting low-cost service on modern highways.

Millions of square yards of Bermudez highways—in all parts of the world and from 10 to 30 years old—have been kept in splendid condition at a cost of less than a cent per square yard per year.

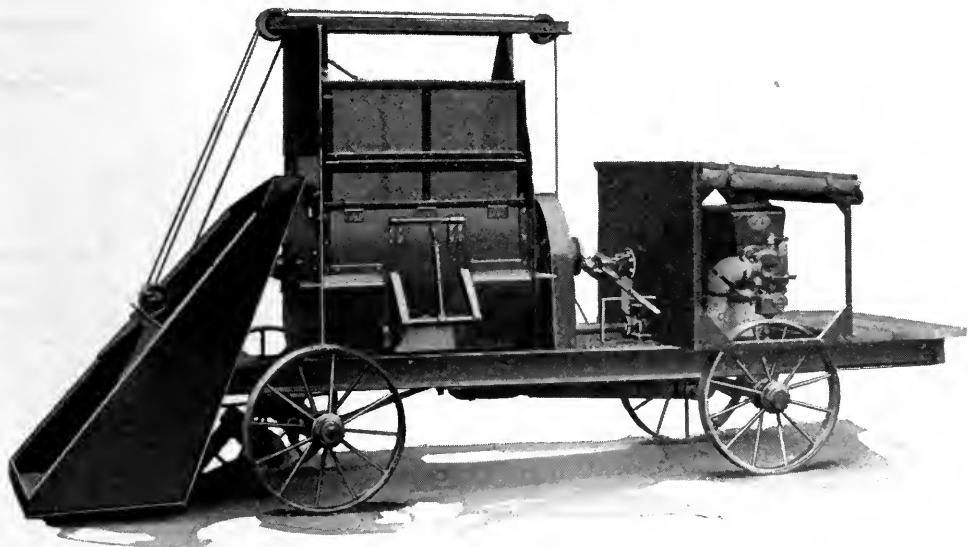
Write for complete service records of this remarkable ages-old, ages-tested material.

New York
Chicago
Pittsburgh

THE BARBER ASPHALT
COMPANY
PHILADELPHIA

St. Louis
Kansas City
Atlanta

BERMUDEZ
Road Asphalt
"IT STAYS PUT"



A MACHINE FOR THE ALMOST INSTANT PRODUCTION OF HOT SHEET ASPHALT MIXTURES

A Complete Small Portable Hot Asphalt Mixer

A process has recently been invented for making hot asphalt mixtures quickly, easily and economically in small quantities. The Iroquois rapid mixer, recently brought out by the Barber Asphalt Company, Land Title Building, Philadelphia, Pa., is a compact machine, in which sand, filler and Genasco liquid asphalt are used. The first two are placed in the skip and then dumped into the Iroquois rapid mixer while the agitating blades are revolving. The liquid asphalt and two pints of gasoline are added and lighted with a match, and in six minutes, when the flame has died out, there is a 4-cubic-foot sheet asphalt mixture hot and ready to spread. Asphaltic concrete and asphalt macadam mixtures can be made in a similar manner.

This method is made possible by the new patented Barber process in conjunction with the use of Genasco liquid asphalt, which provides a material that when flashed will burn until the lighter fractions are burned off, leaving a hot asphalt mixture of a temperature of 250 to 350 degrees Fahrenheit, with no danger of coking the material.

The rapid mixer in this process is a complete bituminous repair plant that can be quickly operated and easily moved from place to place, and requires small space for storage. The entire plant can be mounted on a small motor truck chassis, if desired. In addition, it needs only two men to operate, and eliminates entirely the costly overhead of the larger plant, in which steam must be kept up and many other costly details attended to. The mixer measures only 15 feet 3 inches in length and 4 feet 7 inches in width, with a shipping weight of 5,200 pounds. In addition to the mixer, the following small tools are supplied: two 8 by 6-inch tampers, two 10½ by 6½-inch smoothers, four asphalt shovels, two asphalt rakes, two asphalt cutters, and two rattan push brooms.

A roller is essential to insure proper compression of the various asphalt mixtures, and a 5-ton tandem is preferred. However, satisfactory compression may be secured by the use of a 1,000-pound hand roller with a compression of 50 pounds per square inch.

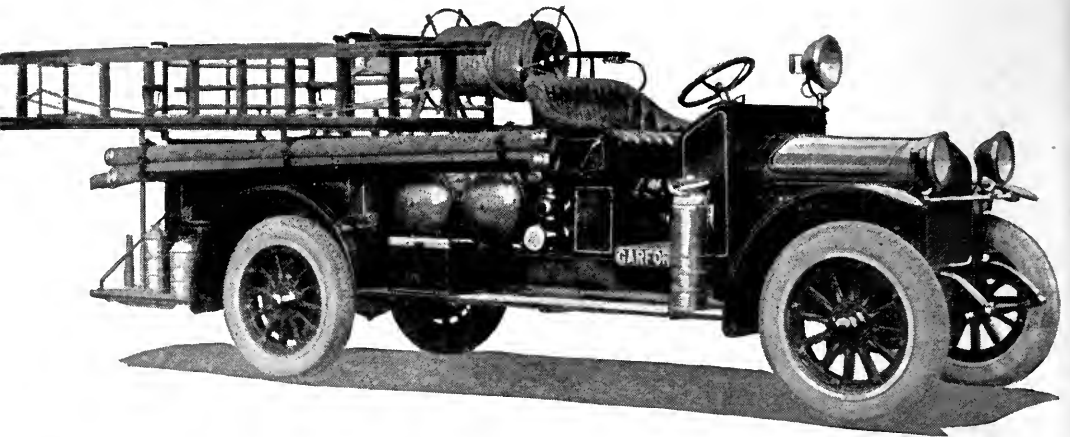
Simplex Valve and Meter Reports Good 1922 Business

The Simplex Valve & Meter Company, 5722 Race Street, Philadelphia, Pa., engaged in the manufacture and sale of meter registers for Venturi tubes, Pitot tubes and devices for controlling the flow of water in filter plants, as well as the manufacture of automatic air valves and combined air and vacuum valves, reports that while its sales cannot be considered a true barometer of business conditions the business of 1922 was the best in the history of the company.

The Simplex Valve & Meter Company is represented by George W. Stetson, 141 Milk Street, Boston, Mass.; W. K. Sowden, 280 Madison Avenue, New York City; John D. Hiles, Pittsburgh, Pa.; Maher Engineering Company, 30 North Michigan Boulevard, Chicago, Ill.; Fred H. Dörner, 548 Milwaukee Street, Milwaukee, Wis.; C. T. McFarland, 307 Mutual Building, Kansas City, Mo.; Water Works Supply & Equipment Company of San Francisco and Los Angeles; and Francis Henkin & Company, Montreal, Canada.

An Addition to the Foamite-Childs Family

The Foamite-Childs Corporation, Utica, N. Y., has announced that it has taken over the manufacturing and distributing activities of the Fire Gun Manufacturing Company, formerly at 115 Fourth Avenue, New York City, and that the New York district office is now located at 183 Varick Street, New York City.



Small Cities—Suburban Communities *Here Is Real Fire Protection*

HERE is a triple combination fire unit having double chemical tanks and rotary pump arranged so that it is possible to pump from chemical tanks into chemical hose, or, from well or other sources into chemical tanks.

This GARFORD apparatus is built for the fire protection problems that are too often hard to solve. It has a reliable pump, thoroughly run in and tested before shipping. Discharge valves open easily at high pressure. Relief valve is simple, positive and quick-acting.

The hose body of specially treated steel panels, is held rigid by angle steel frames, top, bottom and rear. The floor is of 4-inch hardwood

slats arranged to allow for hose ventilation and is removable to allow for greasing, adjusting, etc.

A real, all-round good fire job that offers real protection and reliability—a job your firemen will be proud to operate.

GARFORD engineers will be glad to explain the details of this and other GARFORD Fire Apparatus engineered especially for the user's requirements.

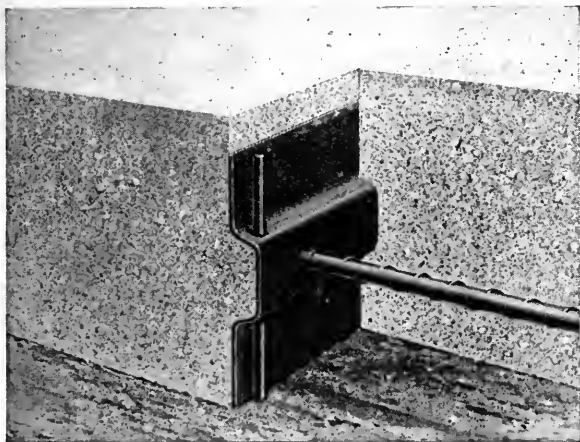
Write for Special Literature

The Garford Motor Truck Company, Lima, O.

Manufacturers of Motor Trucks 1 to 7½ Tons

GARFORD

DEPENDABLE TRANSPORTATION



CONTRACTION PLATE FOR TRANSVERSE JOINTS

Providing Reinforcement and Contracting Joints for Concrete Roads

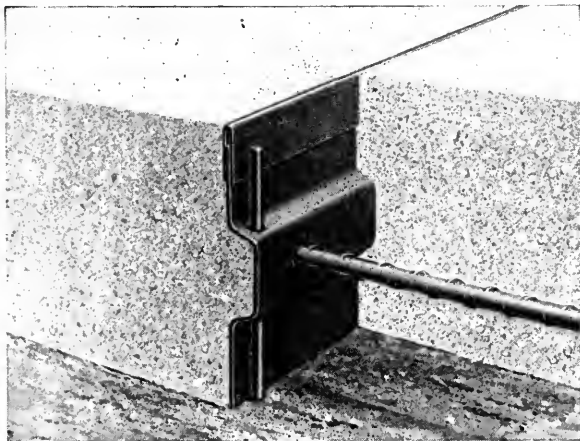
The advantages claimed for flat sheets for concrete road reinforcement fabric have been recognized by the states of New York, Pennsylvania, North Carolina, Ohio and Maryland in their specifications. It is claimed that the sheets may be more easily piled in the storage yards and on cars, that there is no time lost in straightening them for use in the road, and that greater accuracy of installation is made possible. So important are these items that road contractors declare flat sheets show a labor-saving of 20 to 30 per cent over the roll.

Truscon wire mesh is made in flat sheets by the Truscon Steel Company, Youngstown, Ohio, especially for reinforcing concrete roads. The main wires extending across the pavement are spaced 6 inches on centers. All standard types of Truscon road mesh are manufactured with the new Truscon staple joint, which makes the connection absolutely rigid and guarantees that the sheet will remain in form during all necessary handling. The sheets are manufactured with 13 main members spaced 6 inches in centers and with the cross-members a maximum space of 12 inches on centers. The sheets are 6 feet wide. This wide material makes a considerable saving in side laps. The flat sheets are cut in any desired length, so that no lapping is required across the width of the road. Although flat

sheet reinforcement is becoming universally specified for concrete roads, Truscon wire mesh may also be furnished in rolls with 18-inch cores.

The Truscon Steel Company has also brought out a contraction joint which provides a definite plane of weakness in the pavement that forms a straight crack upon contraction of the concrete. For transverse joints, the concrete is finished continuously over the steel plate, as shown in the illustration. When the joint opens to any extent, it is readily filled with bituminous material. The central joint is used to offset the lifting of the edges of the pavement from the subgrade, caused by surface contraction. It thus prevents cracking along the edges. It is purposely made wider to serve as a permanent traffic marker visible at all times. A removable cap plate is placed over the central contraction joint, and the concrete is finished to the top level of the cap as shown.

After the concrete has taken its initial set, the cap is removed, the corners of the joint are rounded off and the opening filled with bituminous material. Truscon contraction joints are made of 16-gage plates. All plates are punched for $\frac{3}{8}$ -inch steel stakes 15 inches long, which are furnished with every joint. The plates do not interfere with the finishing machines. The dowel in the plate provides stiffness in handling, and the interlocking prevents one section from rising above the other.



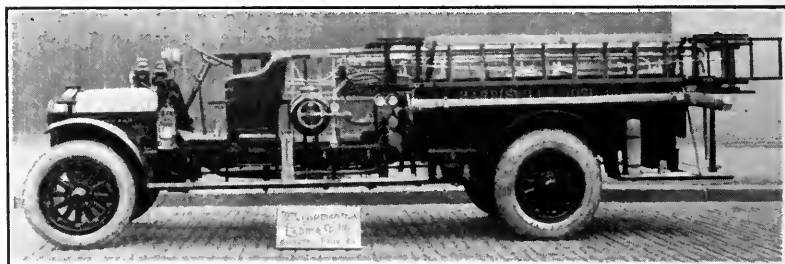
A TRUSCON CONTRACTION PLATE WITH REMOVABLE CAP PLATE FOR FORMING CENTRAL OPEN JOINT



Always Good~Now Better than Ever

ONLY the quality that brings constant, never-failing service to owners could have laid the foundation for Federal's present enviable position. It is one of the soundest companies financially with a dealer and service organization covering the country, backed by a 12 years' record of success.

Ask the Federal dealer near you to show you the truck best fitted to your hauling needs from the complete Federal line of 8 capacities.



Fire department equipment must be thoroughly reliable. It was only after close investigation that this sturdy Federal was selected for the Harrisville Fire Department.

Its abundance of power and its dependability make the Federal truck ideal for city service. Ask for Folder S-10 describing the complete line.

Federal Motor Truck Company
Detroit, Michigan

Another

FEDERAL

"Means Another Satisfied User"



**BLUE-PRINTS AND PHOTO-PRINTS ARE DRIED
FREE OF WRINKLES ON THIS MACHINE**

A New Blue-Print Drying Machine

A new machine, said to present a number of unique features and to be adaptable to drying blue-prints, negative prints, and all other kinds of photographic prints, has just been brought out by The C. F. Pease Company, 851 N. Franklin Street, Chicago, Ill. It will be seen by the illustration that dripping-wet prints are drawn around the heated cylinder by means of an endless canvas belt and delivered dry and free from wrinkles into the receiving tray within easy reach of the operator's hands.

One of the features of the machine is the copper cylinder which heats quickly and retains its heat and to which the prints will not adhere; they peel off automatically without the use of a finger arrangement or other special attachment. It is said that with this dryer, dripping-wet prints may be started in and run through the machine at the rate of 8 to 9 feet a minute. This is accomplished partly by the brass roll over which the prints pass before entering the machine. The roll acts somewhat as a squeegee. The traveling apron on which the wet prints are placed is sloped slightly downward, allowing all the surplus water to drip into a tray provided below the machine.

The heat within the machine is regulated by a thermostatic control when the cylinder is heated with gas. When necessary to heat the cylinder with electricity, it is not possible to use this thermostat, but a series of switches is provided enabling the operator to throw in a sufficient amount of current to heat the cylinder to the proper temperature very quickly, after which it may be kept there by proper adjustment of the switches.

Another feature of this machine is the ease with which the traveling canvas belt may be kept centered. The same arrangement which has proved successful in the Peerless continuous

blueprinting machine is used, and, in addition, a hand wheel on either side of the belt is within easy reach of the operator and enables him to make a slight adjustment when necessary, thus keeping the belt properly centered at all times, preventing it from becoming wrinkled or frayed at the edges. The machine is suitable for paper 42 inches and narrower, and any number of small prints or photographs may be run in at the same time.

Expanding Heil Service

The Chicago offices of the Heil Company, of Milwaukee, Wis., have been moved from their former location, 2718 Wentworth Avenue, to 2422-26 Cottage Grove Avenue. The new service and sales rooms of their Chicago distributors have three times as much floor space as the old offices. Twenty men are employed in this service station to mount hoists, body, and tank equipment. According to H. F. Kneppreth, Manager of the Chicago branch, there is a considerable demand for this truck equipment and hydro-hoists in Chicago. A daily truck service has been established from the Heil factory in Milwaukee to Chicago, enabling customers to get practically immediate delivery of their orders.

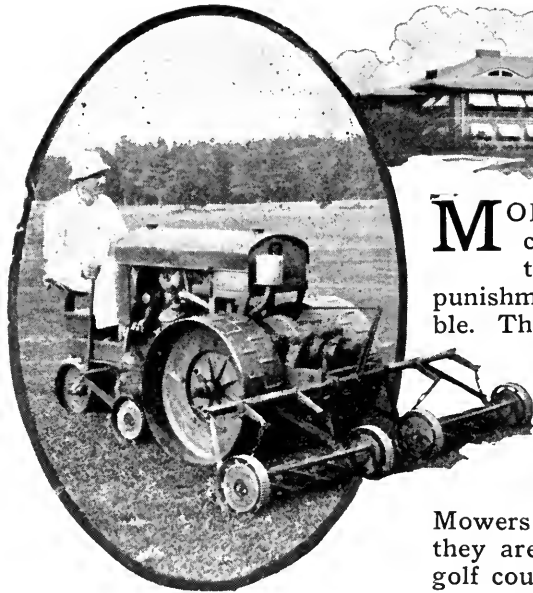
The New York distributing station of the Heil Company, the Motive Parts Corporation, has moved from 136 West 55th Street to new offices at 796 Tenth Avenue, near 43rd Street, New York City.

The H. P. Wilson Company, of Denver, Colo., has recently become Heil distributor for that district. The offices of the Wilson Company are located at 17th and Blake Streets, Denver, Colo.

Street Lighting Installations

Hexagonal and fluted street lighting posts made by the Drake Manufacturing Company, Friendship, N. Y., have recently been installed at Erie, Pa., and at Niagara Falls, Olean, Jamestown, Buffalo, Lancaster, Elmira, Friendship, Dunkirk, Batavia, and Geneseo, N. Y.

The main street of Geneseo is very wide and lends itself particularly well to the installation of boulevard lighting. In September, 1922, the Geneseo Gas Light Company, which furnishes the electric power for the town, purchased and installed 50 Drake lighting standards the full length of Main Street and on part of adjacent streets. The distance between the standards on most of the streets varies from 150 to 200 feet in staggered positions, the average being 140 feet on Main Street. The lamp fixtures in use are General Electric Form 8 Novalux units with rippled glass globes and canopies. Refractors were not considered necessary with these fixtures. On Main Street, 400-candle-power lamps were used, and on other streets, 250-candle-power lamps. The total mileage covered by this White Way system is about 1¼ miles. The standards are of the hexagonal style, 11 feet high, and are painted battleship gray.



MONTH after month, throughout the grass-cutting season, the sturdy "Bulldog" cutting units on Ideal Mowers withstand punishment in a way never before thought possible. These units—made in our own factory of special steels, with Timken bearings and extra-heavy throughout, are the most rugged cutters ever developed.

From every standpoint, acreage, labor economy, freedom from repairs and service available, Ideal Triplex Mowers are supreme in their field. That's why they are replacing others on leading American golf courses, estates and parks.

Write for proof of these strong statements.

Ideal Power Lawn Mower Co. 400 Kalamazoo St.
R. E. OLDS, Chairman Lansing, Michigan
 New York, 13-19 Hudson St. Chicago, 11 East Harrison St.
Dealers in all Principal Cities

IDEAL Power Lawn Mowers

(41)

Speed, Accuracy, Economy and Better Lawns

Performance on a dollars and cents basis is the bid this wonderful power lawn mower makes for the job of keeping your city lawns beautiful. The 4-Acre does the work of four or five men with hand mowers. Cuts four to five acres a day at a fuel cost of less than 40 cents a day.

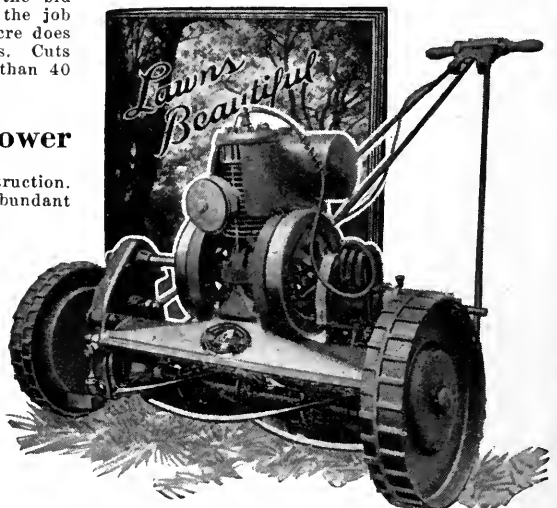
Adopted by leading
Park Superintendents
as Standard Equipment

The 4-Acre Power Lawn Mower

is the highest development of lawn mower construction. Works where no other mower will. Has abundant power for hilly ground and tough spots. It is easy to guide, runs anywhere close to trees, shrubs, flower beds, etc. Built with the mechanical accuracy of an Automobile—sturdy as a tractor.

Write for Catalogue "Lawns Beautiful" and learn how to cut your cost of lawn upkeep and make your lawns a source of city pride. Ask for literature on our Power Putting Green Mower for your municipal golf course.

Jacobsen Manufacturing Co.
 Dept. E., Racine, Wis., U. S. A.



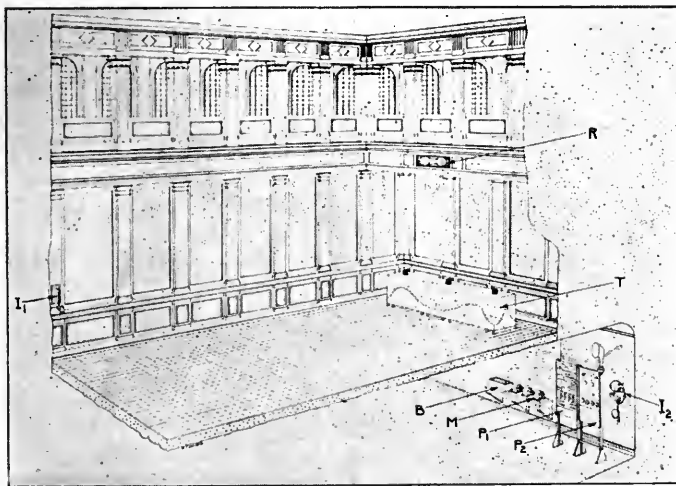


DIAGRAM OF BANQUET HALL OR AUDITORIUM EQUIPPED WITH LOUD-SPEAKING DEVICE

T. Speaker's table with microphones. **B.** Microphone battery. **M.** Motor generator sets. **P1.** Amplifier panels, meter panels, microphone and receiver control panel. **P2.** Power panel. **R.** Projectors concealed in balcony. **I1.** Inter-phone set for communicating with control room. **I2.** Inter-phone set for communicating with observer

Voice-Amplifying System Used Indoors

"Gather up close, ladies and gentlemen," the pet phrase of the ballyhoo, seems destined to pass into disuse. The usual scramble for front seats at Chatauquas, municipal lectures, concerts and entertainments of all kinds also seems likely to follow this phrase into oblivion, for the voice-amplifying system developed by the Western Electric Company has made every seat a front seat. There is no longer need to sit with hand cupped behind the ear, straining every nerve to catch the speaker's words.

This voice-amplifying system, the outdoor uses of which were fully described in the January, 1923, issue of *THE AMERICAN CITY*, uses a microphone or transmitter which is placed on the speaker's stand and catches the speaker's voice. It is so sensitive that he may stand at a distance of eight feet from it. Over his head or hidden in the decorations of the auditorium is a cluster of projectors or horns which distribute the sound, amplified many times, to all parts of the hall. In the basement or other secluded corner is installed the amplifier with its control apparatus.

A number of the large hotels in New York, the Waldorf-Astoria, the Astor, the Commodore and the McAlpin, have added this system to their permanent equipment. It is installed in the grand ballroom in each case, for the use of large assemblies at banquets and in convention. Among the notable events at the Hotel Commodore was the American Bankers' Association Convention, during which the speeches, made in a conversational tone of voice, were heard by everyone in the ballroom, which is 175 feet long by 50 feet wide.

When Clemenceau came to this country on

his pilgrimage of persuasion, every effort was made to conserve the veteran statesman's physical strength. For his initial address at the Metropolitan Opera House, New York, this auditorium was equipped temporarily with the Public Address System. The address was delivered in perfect ease and was heard distinctly in every part of the great opera house. At the Auditorium, Chicago, he was likewise aided by this remarkable system. While in that city, Monsieur Clemenceau made public through Colonel Stephen Bonsal, who acted as his aide, this statement: "The amplifying apparatus which I used in Chicago and in New York was simply miraculous. It opens up new fields of oratory and enables me to reach portions of my audience to whom I could never hope to carry my message without its aid."

The same system was used at the Academy of Music, Philadelphia.

At the opening of the new Frankford Elevated Railroad in Philadelphia this same system mounted in a motor truck made the speeches of T. Hampton Moore, Mayor of that City, audible to thousands of listeners gathered in the streets at Bustleton and Frankford.

This truck made a record-breaking trip from New York to Columbus, Ohio, through one of the worst blizzards of the winter to enable 10,000 people assembled near the Capitol steps to hear every word of Governor Victor Donahy's inaugural address.

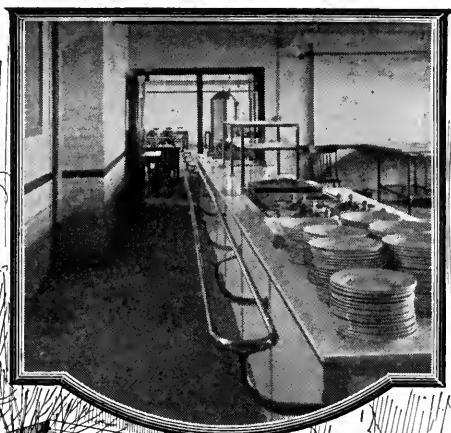
New District Engineer for Brick Association

The Eastern Paving Brick Manufacturers Association, Lincoln Building, Philadelphia, Pa., has announced that A. S. Mirick, formerly with the New York State Highway Commission, and with the state of Nebraska as Chief Road Engineer, has been appointed District Engineer for Western Pennsylvania, with headquarters at Pittsburgh, Pa.

William C. Perkins is Chief Engineer of the Eastern Paving Brick Manufacturers Association in Philadelphia. J. E. Griffin is Eastern District Engineer, at the Philadelphia office, and J. Macklem Perkins is Northern District Engineer, with offices at Towanda, Pa.

Morley Joins Ahrens-Fox

The Ahrens-Fox Fire Engine Company, Cincinnati, Ohio, has announced that George E. Morley, who has been active in fire department work for the last 22 or 23 years, has become associated with its sales department.



Murphysboro High School
MURPHYSBORO, ILL.

Quality that's real economy

Enduring service can be expected from equipment only when quality has been put before any other consideration. This fact is too often overlooked. The name "Master-Made" on School Cafeteria Equipment is the hallmark of the finest that is made. It is our guarantee of the highest standard of excellence.

Planning and consultation service are offered without fee or obligation. Send for our School Cafeteria Portfolio AJ93—it will be of real help to you.

ALBERT PICK & COMPANY

208-224 WEST RANDOLPH ST., CHICAGO, ILLINOIS

COMPLETE OUTFITTERS OF SCHOOL CAFETERIAS

A Distinctive House Number

A new, attractive design of house number, known as the Premax De Luxe house number, has recently been offered by the Niagara Metal Stamping Corporation, Niagara Falls, N. Y. It is made of solid aluminum, the figure itself being 2½ inches high and deeply impressed into the heavy plaque. The edges of the plaque are beveled to form a border or frame, and the



AN EASILY READ NUMBER

figure is finished in satin silver, which stands out against the background of black enamel.

It has been found that this number is unusually legible even after dusk and under relatively poor lighting conditions. The manufacturers claim a particular advantage in that there is no separate frame or holder to collect dirt, and since the whole is of solid aluminum it cannot break or rust and discolor the building to which it is attached.

Committees for Detroit Water-Works Convention

Edgar J. Bittenheim, President of THE AMERICAN CITY, and President of the Water Works Manufacturers Association, has announced the following committees for the Detroit Convention of the American Water Works Association and the Water Works Manufacturers Association, May 21-25:

Transportation, Walter H. Van Winkle, Chairman, Water Works Equipment Company, 50 Church Street, New York City; T. C. Clifford, Pittsburgh Meter Company, East Pittsburgh, Pa.; Raymond Simon, R. D. Wood Company, Worcester, Mass.; Joseph Ivy, American Cast Iron Pipe Company, Kansas City, Mo.; H. Brown, Neptune Meter Company, Chicago, Ill.; H. M. Lofton, Columbian Iron Works, Chattanooga, Tenn. Entertainment, Burt Hodgman, Chairman, National Water Main Cleaning Company, 50 Church Street, New York City; William Sherwood, Vice-Chairman, Hersey Manufacturing Company, New York City; John H. Stutt, E. I. du Pont de Nemours & Co., Philadelphia, Pa.; John F. Reagan, Neptune Meter Company, New York City; George Smith, Michigan Valve & Foundry Company, Detroit, Mich.; Vincent McCarthy, R. D. Wood & Company, Chicago, Ill. Exhibit, George McKay, Jr., Chairman, Leadite Company, Land Title Building, Philadelphia, Pa.; J. D. Capron, U. S. Cast Iron Pipe & Foundry Company, Philadelphia, Pa.; C. C. Behney, Simplex Valve & Meter Company, Philadelphia, Pa. Golf, M. F. Tiernan, Chairman, Wallace & Tiernan Company, Newark, N. J.; Karl Mann, Fire and Water Engineering, New York City; E. Case, Pitometer Company, New York City; John Sosnowski, Board of Water Commission-

ers, Detroit, Mich.; R. W. Conrow, Central Foundry Company, New York City. Press, Isaac Holbrook, Chairman, *Engineering News-Record*, Tenth Avenue at 36th Street, New York City.

Hazen & Whipple Move Offices

Hazen & Whipple, consulting hydraulic and sanitary engineers, have moved their offices to the building located at 25 West 43rd Street, New York City.

Waste Paper and Rubbish Cans

Waste cans that are used on city streets to be filled with such refuse as the passer-by may toss in, must be made of high-grade material and of good workmanship to stand the inevitable rough usage to which they are subjected. The Cleveland Wire Spring Company, Cleveland, Ohio, manufactures the waste can illustrated, of heavy-gage sheet steel with a rein-



A HOODED REINFORCED RUBBISH CAN

forced hood, thus making it a strong unit and better than if constructed of wood or fibre, because of the fire risk. These cans are made 20 inches in diameter, 30 inches deep and 38 inches from the top of the hood to the ground. They are of black steel, painted both inside and outside in any color desired, to harmonize with near-by objects.

Several thousand of these cans are used in Detroit and in a number of the smaller cities in the East and in Ohio.



THE AMERICAN CITY

HOLLOWSPUN

LIGHTING STANDARDS



*Residential Street Lighting in Milwaukee, Wis.
Described in detail in "Hollowspun Standard" No. 4.*

A PPEARANCE is a matter of taste. What is pleasing to one person may not be to another. How then can one safely select lighting standards for an ornamental lighting installation, with any assurance that their appearance will please the general public?

A well-known artist, when confronted with this question, outlined five basic principles by which to gage the aesthetic fitness of any standard:

- (1) Its proportion in relation to the width of street, height of buildings, size of trees, etc.
- (2) Its color, as compared with the tone that will best harmonize with road surface, sidewalks, etc.
- (3) The simplicity of its design and the absence of unnecessary ornamentation.
- (4) The degree to which its surface refracts light, breaking it up in a way to strike the eye as soothing rather than dull or glary.
- (5) Its ability to retain its pleasing qualities indefinitely with a minimum of attention.

Try these or any other tests on a Massey Hollowspun standard.

MASSEY CONCRETE PRODUCTS CORPORATION
Peoples Gas Building Chicago



443 Fourth Ave.
NEW YORK

The American City Magazine

MAY,
1923

Beyond the City's Limits

A JOCLAR critic of a certain city administration is credited with a recent comment to the effect that the only municipal service managed successfully in that city is the water-supply—"and that is running down hill."

Whether or not the clause quoted was figuratively as well as literally true in the particular city to which it was applied, the comment gained strength for its clever emphasis on the water-supply as a municipal service of such vital significance that no city can afford to neglect it. And the problem of pure and plentiful water is for most cities not merely of local but of regional importance. Its existence is one of the causes for the recent springing up in Europe and America of official and volunteer organizations for regional planning. In England the results of one of these studies have already been published in an elaborate volume, "The Donchester Regional Planning Scheme." The area studied covers 169 square miles and embraces eight separate local authorities. "An adequate supply of drinking water," says the report, "is probably the first essential to life. This is always a difficult matter and has become within recent years acute in many of the industrial areas of England. The supply of water should be dealt with regionally."

Cooperative action in certain undertakings affecting municipalities in the environs of Boston was inaugurated thirty years ago, when there was created the first of the Metropolitan Commissions which have been serving some forty cities and towns in the development of their water-supply, their main drainage, and their park systems. No

machinery, however, has as yet been set up for the planning of more convenient means of transportation and communication between different parts of the district. To meet this need, there is now a definitely organized movement for state legislation to establish an official permanent Metropolitan Planning Board. This proposal has the able leadership of such organizations as the Boston Chamber of Commerce, the Associated Industries of Massachusetts, and the Affiliated Technical Societies of Boston, and the cooperation of some 75 mayors, boards of selectmen, planning boards, and other organizations.

A report recommending such a Metropolitan Planning Board, in substantial accord with the proposals of the Boston Chamber of Commerce, was submitted a few weeks ago to the Massachusetts Legislature by the State Department of Public Utilities. Because of a lack of coordination between the different municipalities in the metropolitan area, the report points out, extreme confusion has resulted in relation to traffic. The lack of a general plan for the laying out and improvement of the arteries of traffic not only affects railroads, railways, automobiles, other vehicular traffic, bridges, highways, and foot travelers, but also prevents the various municipalities in the area from locating property sites for fire stations, police stations, schoolhouses and other buildings in relation to arteries and instruments of traffic to be hereafter constructed.

Problems coming within the scope of this nascent art of regional planning were summarized by Nelson P. Lewis, Chief Engi-

neer for the Committee on the Plan of New York and Its Environs, in a paper before the 1923 convention of the American Society of Civil Engineers:

"To counteract the tendency to excessive concentration of population and industrial activity in certain spots; to simplify the problem of transit between different portions of the area; to bring facilities for receiving and shipping goods to all parts of the region; to establish a method of controlling the use of private property, consistently and equitably applied through the entire district, by the adoption of what might be called regional zoning; to locate places of public recreation so that they will be within easy reach of all; to relieve present congestion, which has been aptly described as 'the crowding of streets by traffic, the crowding of lots by structures, and the crowding of rooms by people.' If these results can be attained, it seems reasonable to predict that general health will be improved, a spirit of neighborliness will

be promoted, the nervous strain due to tire-some journeys to work and back under conditions often indecent will be abated, children and adults will acquire that wholesome zest coming from closer contact with nature, political dangers of revolutionary temper and mass action will be lessened, and much of the present economic waste will be avoided."

In addition to the environs of Boston and New York, metropolitan districts in America where regional planning is now being advocated by civic bodies include those of Baltimore, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, Minneapolis, New Haven, Norfolk, Pittsburgh, St. Louis, Springfield, Mass., and Washington, D. C. In these and doubtless many other areas the economic and social importance of regional planning is meeting with rapidly growing recognition.

New York to Celebrate Its Twenty-fifth Anniversary

MAYORS and other officials from many cities are expected to visit the exposition to be held May 28 to June 23 in celebration of the twenty-fifth anniversary of the Greater City of New York. This exposition, which is to be held at Grand Central Palace, 44th Street and Lexington Avenue, will afford an exceptional chance to study the machinery of the greatest city in America. All of the 59 departments of the city will have exhibits. There will also be lectures on a wide variety of municipal subjects, and conferences for mayors and heads of municipal departments from all sections of the country.

The chairman of Mayor John F. Hylan's Committee in charge of the celebration is Rodman Wanamaker, head of the Wanamaker stores. Grover A. Whalen, Commissioner of Plant and Structures, is his chief aid, and there

is an advisory committee which includes members of the largest commercial and banking organizations in the city.

"Taxpayers of all big cities are undoubtedly a unit in their interest as to what becomes of the money they turn into the city's coffers," said Mr. Wanamaker recently. "The coming exposition will have for one of its principal objects showing the taxpayer where his money goes and what it is used for."

On May 26 there will be a great civic and military parade on Fifth Avenue. All departments of the city administration will take part, including 2,000 firemen and 4,200 policemen. The exposition will be formally opened on May 28 by President Harding. On June 16 there will be a business men's parade which will show the progress the city has made in business methods in the last twenty-five years.

Chronology of the Governmental Research Movement

IN its Legislative Bulletin for March, 1923, the Detroit Bureau of Governmental Research publishes a list of the more important citizen organizations for securing increased efficiency in government through cooperation with officials in the various cities, counties and states. The list, rearranged in chronological order by year of organization, follows:

1906, New York City, Bureau of Municipal Research
1908, Philadelphia, Bureau of Municipal Research
1910, Chicago, Bureau of Public Efficiency
1911, Oakland, Tax Association
1912, Dayton, Research Association
1913, Minneapolis, Bureau of Municipal Research
1913, Ohio, Institute for Public Service
1914, Akron, Bureau of Municipal Research
1914, Milwaukee, Citizens Bureau
1914, Toronto, Bureau of Municipal Research

1915, New York City, Institute for Public Service
1915, Rochester, Bureau of Municipal Research
1915, New Jersey, Bureau of State Research
1915, New Mexico, Taxpayers Association
1916, Detroit, Bureau of Governmental Research
1916, California, Taxpayers Association
1916, United States, Institute for Governmental Research
1917, San Francisco, Bureau of Governmental Research
1918, Pennsylvania, Research Bureau
1919, Canada, Citizens Research Institute
1920, Cleveland, Municipal Research
1921, Des Moines, Bureau of Municipal Research
1921, Duluth, Taxpayers League
1921, Kansas City, Public Service Institute
1921, St. Paul, Bureau of Municipal Research
1922, Calgary, Citizens' Research League
1922, St. Louis, Bureau of Municipal Research
1922, New York, New York State Association
1923, North Dakota, Taxpayers Association

Laying Steel Pipe Water-Mains in Detroit

Congested Conditions of Street Made Special Care Necessary

DURING the last year over 55,000 feet of 36- and 48-inch steel water-mains have been laid in Detroit, Mich. While steel lines are used quite frequently in most of our Eastern cities, this is the first instance of their use in Detroit.

The laying of this pipe was accomplished in record time under trying conditions

end to end of the larger line.

To get under the Grand Trunk Railroad tracks, a siphon 45 feet in depth had to be constructed below the present street grade at Dequindre Street. To handle this work, a rectangular shaft and a circular tunnel were driven, the latter being 8½ feet inside diameter and built of four rings of brick



AUSTIN EXCAVATOR DIGGING TRENCH IN BACKGROUND; GANG PREPARING BELL-HOLES IN FOREGROUND

which are not for the most part ordinarily encountered in pipe line work. The 48-inch line, known as the St. Paul contract, was laid entirely through city streets, extending from the pumping-station through the heart of the city within one block of Grand Circus Park, ending at Sixth and Elizabeth Streets, a distance of approximately 6 miles. Included in this contract and parallel with the 48-inch steel line, a 12-inch Universal cast iron pipe line for fire and domestic services was laid from

A second siphon was located at John R. Street, being 25 feet deep and also brick-lined. In addition to these major underground crossings fifteen other brick tunnels were constructed under the Michigan Central Railroad and the Detroit Street Railway tracks.

How the Job Was Handled

Offsets to the center line of the ditch and depth of the subgrade were marked on the adjacent curbs along the streets by the

Water Board field engineers, and from these points the contractors' engineers kept the excavating machines and pipe gangs checked up as to line and grade. To meet the requirements of the city, the pipe, which is made in 30-foot sections, was stored on vacant land some distance from the line on receipt from the shop. From this point it was hauled by motor truck and trailer and strung just immediately in advance of the work. It was the city's idea to confine the work within reasonable limits and prevent undue congestion of the heavy street traffic, hence the stringing of the pipe only immediately in advance of the work. In this way much trouble and annoyance was avoided and the city's business throughout this area was left relatively unimpeded.

Gasoline-driven concrete breakers made by the Buckeye Company, Findlay, Ohio, preceded the excavating machines, breaking the pavement by successive drops of the hammer. Following the breakers, Keystone back-action shovels removed the excavation to a depth of $4\frac{1}{2}$ feet. Two

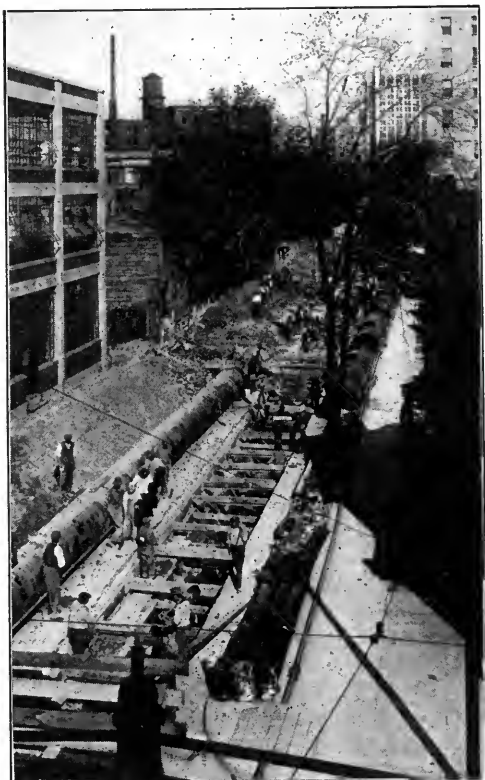
essential things were accomplished by this operation: The dirt was surplus material and not required for backfill, so was loaded immediately into 5-yard dump-trucks and carted away to the dump, inasmuch as it was necessary for the contractor to haul the material which would be displaced by the pipe line. Secondly, the shovel at a depth of $4\frac{1}{2}$ feet uncovered and exposed the various service lines for gas, water and electricity, as well as a large number of ancient water lines and modern street drains, telephone ducts and various intersecting subsurface obstructions. Three thousand services were changed during construction.

During the excavating in a very densely populated part of the older section of the city, large numbers of wood pipe lines made of tamarack were encountered in the pipe trench. These had long since fallen into disuse, but nevertheless were found in almost perfect condition. The wood sections laid in the early sixties were 6 inches thick and 8 feet long, connected with wrought iron thimbles, and were bored throughout 2 inches in diameter. The services leading from these old water lines were made of wood spools with $\frac{1}{2}$ -inch bores and $\frac{1}{2}$ -inch lead lines to the houses.

Immediately following the steam shovel service, mechanics made temporary by-passes so that the Austin trenching machine which conducted the real work of excavating would not be further interrupted or delayed. The excavated material was dumped from the buckets of the machine onto a conveyor belt and thence to the side of the ditch. The next operation was the finished grading or bottoming of the ditch, and the excavation of bell-holes at the field joints for the accommodation of the pipe gang, riveters and calkers.

Immediately following this, the pipe was laid in the ditch, as it was the practise to keep as close to the trenching machine as possible, especially when the ground was bad. In good stretches of stiff clay when bracing was unnecessary, the excavating machines were pushed to the limit and generally kept about 200 feet ahead of the pipe gang.

The pipe, having been previously strung along the line ahead of the concrete breakers and trenching machines, when reached by the pipe gang was rolled out on skids



LAYING THE 36-INCH MAIN ON ELIZABETH STREET



NORTHWEST CRANE BACKFILLING TRENCH
Gang laying pipe with tripod derricks in background

across the finished ditch. After the removal of the skids, two 18-foot tripod derricks were used to lower the pipe into the trench, and it was then connected by means of fitting-up bolts. The rivet gangs and calkers followed next in order, removing the bolts and riveting and calking up the field joints, driving something like 76,000 1-inch rivets.

Two compressor units, delivering air at 100 pounds pressure at the hammers, through a 3-inch pipe line, furnished the power for the Chicago pneumatic hammers for driving and calking. Two compressor plants were used, the first consisting of an Ingersoll-Rand compressor, and the second of a McKiernan single-stage compressor. The average length of 3-inch line supplied by each machine was about one mile.

Before the water-main was accepted by

the Board of Water Commissioners it was tested to 100 pounds hydrostatic pressure. This was accomplished through a series of fifteen tests in each of which practically 1,500 feet of pipe was bulkheaded at each end with steel dished test heads and rubber gaskets. After the tests the line was back-filled by Northwest Engineering Works skimmers and then flooded and brought to an elevation 6 inches above the street grade, the finished paving being done by the Detroit Department of Public Works.

The T. A. Gillespie Company of New York City were the contractors, employing over 600 men on this project under the direction of M. J. Coffey. The steel pipe installed was manufactured by the East Jersey Pipe Company, New York City, manufacturers of Lock Bar steel pipe.



THE NEW 350-MILLION-GALLON FILTER PLANT OF THE DETROIT WATER-WORKS

The photograph, furnished through the courtesy of Theodore A. Leisen, Chief and Consulting Engineer, shows also the filtered water reservoir at the right, and the intake at the left in the background

Traffic Interference with Street Cleaning

THE increase of automobile traffic has interfered seriously with street cleaning work. In many instances cities do not get the assistance of the police and other agencies that have the regulation of traffic at hand; thus the actual cleaning of streets is greatly retarded. In East St. Louis a motor sweeper is used for clearing the streets. The schedule has been changed several times, from day to night operation and from night to day operation, and it is about as difficult to operate at one time as another. There are garages and filling stations on nearly all street corners, and many of these places repair machines on the street.

The sweeper operator reports almost every night that automobiles are parked in the same places all night. The sweeper has to go around them, so that from 75 to 100 feet of street remains uncleaned. When the Commissioner inspects the street the next day and the machine is gone, the spot is still uncleaned and it looks bad.

In Chicago there is an ordinance preventing any parking whatsoever in certain restricted territory in the down-town section between seven and ten in the morning and between four and seven in the afternoon. Of course, that protects only a certain part of the city. During the rest of the day autos are permitted to park for 30 minutes, which means that there is a line of cars at all times, seriously interfering with street cleaning, especially in winter when snow has to be removed.

In the theater district the traffic is lined up against the curb all the time. After theater hours the cabs take the place of private vehicles.

In St. Louis, the cleaning gang starts out every night at 12 o'clock after the theaters are out and when the restaurants are nearly empty. Not much trouble is experienced after 12, as there are very few machines on

the streets. If there is a car in the way and the street cleaning gang cannot work until it is removed, it is simply pulled into the nearest block that has already been cleaned. This has helped in educating people to keep their machines out of the down-town area.

All the down-town streets are asphalt and are cleaned every night with a pick-up machine, and every two weeks they are flushed and broomed. The paved streets in the outlying districts are flushed twice a week after ten o'clock at night. The people there have also been educated, because if the machine is in the way when the flusher cleans under it and around it, the machine gets spattered with mud. The drivers know the time when the flusher is coming, so the streets are nearly all clear of cars.

In Joplin, Mo., there is an ordinance prohibiting the parking of cars in the down-town district after midnight unless someone is in charge of the car. Car owners are now educated to such an extent that when the street cleaning is started at midnight, there is nearly always somebody at hand to move the cars ahead of the gang.

When the ordinance was first made, the policemen on the beat noted the cars that were located along the curb and sought out the owners to get them to move their cars. There was some trouble, but finally the street cleaning truck was equipped with a pulling chain and pulled everything out that was in the way. To further educate car owners, the street cleaners began pulling out cars that were improperly parked, and let the owner hunt for them. Now there is excellent cooperation between the car owners and the entire street cleaning department.

ACKNOWLEDGMENT.—Prepared from the official report of the discussion of this subject at the Third Annual Conference of the International Association of Street Sanitation Officials.

The Citizens' Responsibility

Whether they like it or not, whether they know it or not, a collective responsibility rests upon citizens of the present generation for making or marring their city's future. So, whether our city of the future is physically good or physically bad is our direct responsibility.—*Herbert S. Hare.*

County Rock-Crushing Plant a Money-Saver

Marshall County Opens Up Rock-Crushing Plant to Supply Own Material for Road Paving

By Donald C. Elder

County Engineer, Marshall County, Iowa

AFTER the voters of Marshall County, Iowa, had put themselves on record as favoring a hard-surfacing program for the primary road system, the Board of Supervisors began to investigate the advisability of the installation of a rock-crushing plant at the quarry as a means of decreasing the cost of the pavement. After careful inspection and ex-

ated about twenty years ago, furnishing dimension building-stone. Work had been carried on some distance below water-level. Operations were discontinued at that time on account of the difficulty of getting rid of the water. The land bought does not include the old workings, but extends back from the face of the ledge. It averages about 20 feet above water-level



A VIEW OF THE STONE QUARRY LEASED BY MARSHALL COUNTY, SHOWING THE STONE-CRUSHING AND SCREENING PLANT

haustive tests, 5 acres of land, part of what is known as Rock Valley quarry, which contains a fairly high grade of limestone deposit, was purchased at \$1,000 per acre. Approximately 2 acres additional was leased as a site for the crushing plant and railroad spurs.

The quarry is located about 4 miles southeast of Marshalltown at the junction of the Lincoln Highway and the M. & St. L. Railroad. The quarry had been oper-

ated in the old excavation. Overlaying this ledge is some 15 or 20 feet of clay, which necessitates extensive stripping.

Two methods of stripping the clay presented themselves: first, by means of hydraulic pressure; second, by means of steam shovel. On account of several serious difficulties in the hydraulic method, and the fact that a cut of several thousand yards of excavation was necessary for the railroad spur entrance, the steam shovel

method was adopted and a Model 21 Marion steam shovel was purchased.

The crushing and auxiliary equipment was furnished by the Austin Manufacturing Company and consists of a No. 7½ and a No. 5 Austin gyratory crusher, a bucket conveyor, a revolving screen, a friction hoist, five end-dump cars, and the necessary shafting and auxiliaries.

Electricity was chosen as the motive power. A transmission line approximately 1½ miles long was erected. The 3,300-volt line from Marshalltown to Le Grand was tapped, and the 3-phase, 60-cycle A. C. current of 2,300 volts was carried to the quarry, for use in the motors. For illumination at night this current was stepped down to 110 volts.

Slip-ring induction motors of 150 and 40 h. p. were purchased, the former to drive the crushers, conveyor, screen and hoist, and the latter to drive a 10- by 10- inch Sullivan air compressor to supply air pressure for jackhammer drilling. The question of individual drive presented itself, but the increase in the number of motors required for this system would have complicated and delayed delivery, and the idea was discarded. The large motor drives a jack-shaft from which power is transmitted to the various machines through a system of belts, chains and gears.

The crushers are located in an open framed structure 34 by 42 feet in ground plan by 35 feet in height. The motor house, a "lean-to" 18 by 34 feet, abuts the crusher house. The bins are 18 by 32 feet in plan and about 48 feet in elevation, having a clearance of 21 feet 6 inches beneath, to allow engines and cars to pass. The screen house is located over the bins and is approximately 20 feet high. From the ridge-pole to the ground is about 70 feet.

It is interesting to note that practically all the timber for the plant was furnished by a native timber company, operating just across the Lincoln Highway from the quarry.

A spur, 1,200 feet long, with a passing switch of 500 feet, was run in from the M. & St. L. main line. Trackage to provide for ten loaded and ten empty cars is provided.

The stripping was accomplished by the shovel, which was at first served by teams

and wagons. This proved so unsatisfactory, however, that Koppel and Western side-dump cars were employed. These were moved by means of a home-made gasoline dinky constructed by "Bill" Johnston, the shovel runner. An old Continental motor furnished the power, which was transmitted through a friction drive. This feature was later changed to a positive gear drive.

While some of the stripping was employed to fill around the crusher plant, by far the greatest per cent was wasted into the pond formed by the former quarrying operations. A trestle work was built out at one end of the lake, and as the fill was widened, the track moved over.

Preparatory to shooting, the drilling is accomplished by means of an Armstrong Type 25 blast hole driller, which drills a hole 5 inches in diameter and 23 feet in depth. The holes are in rows and staggered so as to be about 10 feet from center line to center line. Enough holes are shot to provide a quantity of rock that can be handled nicely. At first some difficulty was encountered in shooting, because of the seamy nature of the rock, which allowed the charge to shoot out. This was avoided, however, by heavier loading.

The steam shovel is used to load the rock, as well as to strip the overburden. This operation was at first done by hand. The rocks that are too large to be accommodated by the crushers are pushed to one side by the shovel and are jackhammered for subsequent blasting. The small pieces are loaded into the rock cars, which are towed by a team to the foot of the incline leading over the crushers.

Here the hoist cable is attached to the car, which is pulled up the incline over the crushers. At the top of the incline the end gate of the car is automatically raised and the load is dumped into the No. 7½ crusher. When empty, the car is run down by gravity and another loaded one secured.

This crusher has an hourly capacity of about 125 tons of rock crushed to pass a 3½-inch ring. It discharges into a bucket conveyor, in which the rock is carried to the top of the screen house, where it is discharged into the 48-inch by 20-foot revolving screen. This screen has 8 feet of 1-inch perforation and a 5-foot 6-inch dust jacket with 5/16-inch perforations. The

graded rock passes from the screen into the proper bin, while the rejections, or rock too large to pass a 2¾-inch ring, pass over the end of the screen into the rejection chute, and thence to the No. 5 crusher for further crushing. This crusher also discharges into the same conveyor as does the No. 7½, so that the rock is once more discharged into the screen for gradation. The graded rock is loaded in the cars for shipping by gravity through gates in the bottom of the bins. The rock, although containing some oolitic formation, is, in general, of very good quality for road-building purposes, having a French coefficient of 8 to 12.

When hard-surfacing was voted in 1919, no means were provided of furnishing the necessary finances by authorizing a bond issue at the same time. Consequently, the paving program has been on a "pay-as-you-go" basis, with 6 miles constructed to date. By the end of 1923, however, our 49 miles of primary road will be practically all to established grade, drained and bridged.

In addition to the coarse aggregate furnished for the 6 miles of 8-8-8-inch concrete pavement 18 feet wide, crushed rock has been and is at present being furnished for county bridge and culvert construction. A 7-mile surfacing project on the Glacier Trail, a secondary road, is under progress, utilizing the crushed rock passing a 1¼-inch ring with about 50 per cent of the screenings removed. This material

is placed to the extent of 1,500 cubic yards to the mile in the same manner as is gravel. It is hoped to approximate a gravel surfacing rather than a macadam type.

The screenings—the by-product of the quarry—have several uses. With a total calcium carbonate content of between 85 and 90 per cent, they are an excellent medium for neutralizing soil acidity. They also have a possibility of being used for road repair work and perhaps surfacing on minor highways.

The working force, in addition to the superintendent, while it varies with conditions, consists in general of the shovel crew of three men, the well-drill operator, the jackhammer man, the track man, the hoist operator, the blacksmith, the oiler, two men handling the rock cars, and the water boy. Bunkhouses have been erected on the premises, in which the foremen and workmen live.

Already the rock-crushing plant has proved itself a money-saver in reducing the cost of paving to the county. It has restored to activity one of the deserted spots of the county, has made use of home materials for a home enterprise, and has established a new home industry that should furnish employment to a large number of men for several years to come, and also give the county engineer and road officials relief from anxiety as to where their road-building materials are to come from for paving their primary road system.



EAST PERRY SQUARE, ERIE, PA., LIGHTED WITH 4-AMPERE LUMINOUS ARC LAMPS ON KING STANDARDS

ALBANY, N.Y. ELECTRIFIES WATER PURIFICATION PLANT



Change Effects Economy and Ease of Operation of Entire Municipal Plant

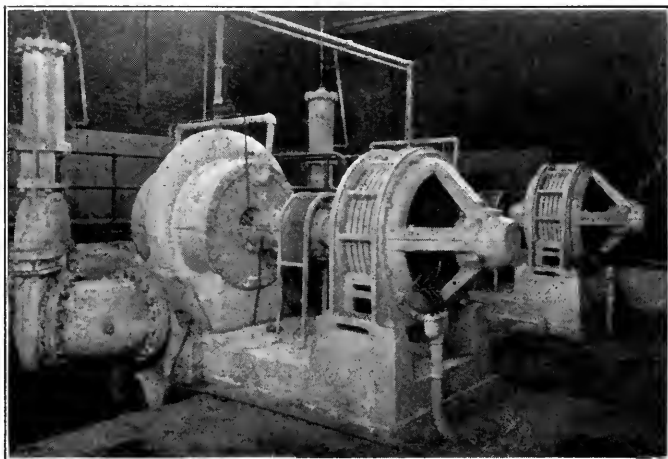
THE city of Albany, N. Y., being dependent on the Hudson River for its water-supply, installed, some years ago, a filtration system, with steam-engine-driven pumps. Recently the system was enlarged and modified, and, after considerable investigation into comparative economy, reliability, and performance characteristics, the steam engine drive for the pumps was replaced with electric motor drive. Improvements were also made in the filter system, the new system being put into operation early last summer.

Under normal conditions the present plant supplies the city reservoirs with about 18,500,000 gallons of filtered water a day, taking care of a per capita consumption in the city of 145 gallons a day. The effective-

ness of the system is such that the reservoir water is 99 per cent pure; the death rate from water-borne diseases in the city has fallen from 85 to 2 per 100,000 of population per year. This is especially remarkable, considering the fact that the Hudson above Albany is contaminated by the sewage of many cities, both on its banks, and on those of the Mohawk, which empties into it farther up.

The equipment of the plant consists of two filter systems, and eight Worthington pumps of various capacities driven by General Electric induction motors, with, in most cases, individual drum control. Power to operate the electrical equipment is delivered to an outdoor transformer substation at 13,200 volts, 3 phase, 40 cycles, where it is stepped down to 440 volts and distributed through a main switchboard which carries the primary control for all the motors except the raw water pump motors. This switchboard also carries the control switches for the house lighting circuits. Some of the pumps are used to circulate the water through the filter system, and some to supply wash water to the filters.

Unfiltered water is admitted directly from the river into an open well, whence it is pumped into the sedimentation basin



RAW-WATER PUMP, ALBANY, N. Y., FILTRATION PLANT, PUMP-
ING FROM AN OPEN WELL TO THE SEDIMENTATION BASIN

through a 36-inch discharge main at a maximum discharge rate of 17,000 gallons, and a minimum rate of 12,000 gallons per minute. This duty is performed by two duplicate pumping units, each driven by a direct-connected 150-h.p., varying-speed, slip-ring induction motor. The motor speed is controlled by drum controllers mounted in the same room, the primary control being mounted on the same supports. One of the units is operated continuously

night and day, pumping at an average rate of 14,000 gallons per minute against a total head of about 19.6 feet. This rate and head vary, however, according to water conditions in the river; hence the necessity for varying-speed control on the motors. During high water the pumps supply 12,000 g.p.m. against a head of about 15 feet, and during low water, they supply 17,000 g.p.m. against a head of about 24 feet.

From the sedimentation basin, the water, after some of the heavier impurities have been allowed to settle out, is pumped to the preliminary filters, also known as the rapid sand filters. These are sixteen in number, located in a long building adjoining the pump room. There are two pump units, one operating continuously, and each capable of delivering water at from 12,000 to 17,000 gallons per minute to the filters, against heads varying from 8.7 to 9.0 feet. The water-level in the filter units is maintained at 81 inches, as shown by two gages mounted in front of the filter near the control handle, the depth of the sand being about 40 inches. Periodically the filters are drained and washed, the latter being accom-



CONTROL GALLERY FOR PRELIMINARY OR RAPID SAND FILTERS, ALBANY, N. Y., FILTRATION PLANT

plished by forcing water up through the sand, from underneath, and allowing it to drain out again. The pumping units for supplying water to be filtered, and that used in washing the water, are located in the adjoining room. The former are driven by 60-h.p., 343-r.p.m. varying-speed, slip-ring induction motors, and the latter by 250-h.p. motors of the same type, which pump at a uniform rate of 12,000 g.p.m. against a total head of 56 feet.

From the preliminary filters, the filtered water flows by gravity to the second set, known as the slow sand filters. These are located out of doors, covering an area of about 0.7 of an acre. The water coming from these filters is analyzed and, if necessary, is given a chemical treatment, to insure its conformity to the purity standard. Leaving the filter plant, the water flows some distance to the pumping-station, where it is pumped to the reservoirs. The slow sand filters are washed in much the same way as the preliminary filters. The wash water is supplied by pumps located in the main building, at 1,000 gallons per minute.

The Importance of the Water-Supply

When we stop to reflect upon the life of the community, it seems to me that we must admit that the water-supply is of fundamental importance. There is no other service of a public nature which is so extremely important to the life of a community as the water-supply. Moreover, there is no other service which is so cheap, even at present-day rates, as the water-supply.—LEONARD METCALF.

Maintaining 268 Motor Trucks and Cars in Newark, N. J.

A Statement of How the Vehicles Are Used and Distributed

IN 1922, the city of Newark, N. J., paid \$134,338.90 for the maintenance of its 268 pieces of motor equipment. This charge includes gasoline, oil, tires, repairs, and salaries of the men in the city repair shop who took care of the \$700,000 worth of passenger cars, motor trucks, fire-fighting apparatus, police patrols and motor-cycles. Nearly 50 per cent of the equipment is owned by the Department of Streets and Public Improvements, and approximately one-half the maintenance is chargeable to that department.

four 6½-ton flushers, one 6½-ton Auto Eductor, one 5-ton electric truck, one street sweeper, and twelve 1-ton and 2-ton trucks. Six of the 5- and 6-ton trucks and the three tractors belonging to the Department are equipped with snow-plows. During the last year, two of these plows were constructed in the Department shops, near the City Hall.

Care of the Cars

The Department of Streets and Public Improvements cares for the cars of other

STATISTICS OF NEWARK, N. J., CITY MOTOR VEHICLES

DISTRIBUTION OF MACHINES

| Department | Limousines | Sedans | Coupés | Tour- ing | Road- sters | Trucks | Trac- tors | Motor- Cycles |
|--------------------------------------|------------|--------|--------|--------------|----------------|--------|---------------|------------------|
| Streets and public improvements..... | 1 | 10 | 4 | 19 | 19 | 37 | 3 | 2 |
| Public affairs | 1 | 2 | .. | 5 | .. | 2 | .. | .. |
| Parks and public property..... | 1 | .. | .. | 2 | 1 | .. | .. | .. |
| Revenue and finance..... | 1 | .. | .. | .. | .. | .. | .. | .. |
| Public safety | 1 | .. | .. | .. | .. | .. | .. | .. |
| Building | .. | .. | .. | 2 | 1 | .. | .. | .. |
| Electrical inspection | .. | .. | .. | 2 | .. | .. | .. | .. |
| Fire | .. | .. | .. | .. | 11 | 40 | 16 | .. |
| Police | .. | .. | .. | 17 | 2 | 10 | .. | 42 |
| Board of education | .. | 2 | 1 | .. | .. | 8 | .. | .. |
| | 5 | 14 | 5 | 47 | 34 | 97 | 19 | 47 |
| Total number of vehicles..... | 268 | | | | | | | |

COST OF MOTOR EQUIPMENT

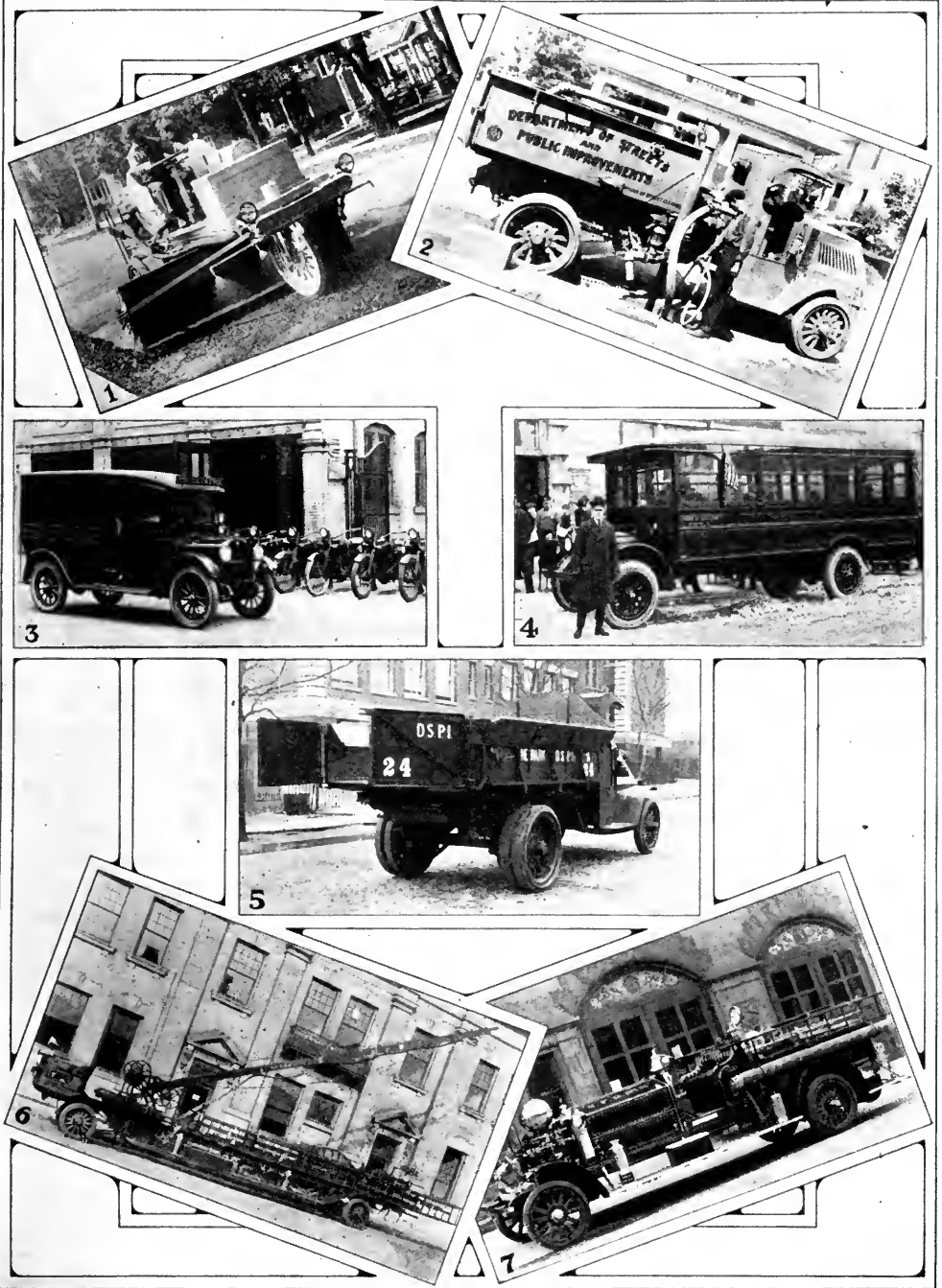
| | Trucks | Passenger Cars | Motor-Cycles |
|--------------------------------------|--------------|----------------|--------------|
| Streets and public improvements..... | \$151,088.50 | \$72,662.90 | \$493.50 |
| Public affairs | 30,241.65 | 12,513.50 | 960.00 |
| Parks and public property | .. | 8,114.93 | .. |
| Revenue and finance..... | .. | 5,808.45 | .. |
| Public safety— | | | |
| Fire department | 361,993.32 | 15,543.76 | .. |
| Police department | 20,256.50 | 23,117.75 | .. |
| Building department | .. | .. | .. |
| Electrical | .. | 4,383.92 | .. |
| Totals | \$563,585.17 | \$142,145.21 | \$1,453.50 |
| Grand total | \$707,183.83 | | |

The city owns 5 limousines, used by the directors of the various departments, 14 sedans, 5 coupés, 47 touring cars and 32 roadsters, in addition to 87 trucks, 19 tractors and 47 motor-cycles. Of the trucks, 30 belong to the Fire Department, and 9 form the chassis for the patrol wagons of the Police Department. Two of the chassis are used as busses by the Board of Education for transporting crippled children.

Among the 37 trucks which the city records show belong to the Department of Streets and Public Improvements, valued at \$151,083.50, are six 5-ton dump trucks,

departments, whenever its mechanics are available. Last year ten cars from other departments were given supplies and in some cases were repaired by the Department mechanics, the cost, together with a small addition to meet overhead expenses, being charged to the department to which each car belonged. The Department started the year with a capital of \$10,000, finished the year with its capital intact and showed a profit of \$1,200 to the city. Both capital and profit were turned back to the City Treasurer.

The garage costs for the year 1922 were



A FEW OF THE TYPES OF MOTOR VEHICLES AND APPARATUS USED BY THE CITY OF
NEWARK, N. J.

1. Elgin auto sweeper for street cleaning. 2. An Auto Educator for cleaning catch-basins. 3. Type of police van and motor-cycle used in Newark. 4. Type of bus used for transportation of crippled children to and from school. 5. Five-ton dump-truck equipped with "Newark tailgates." This gate was designed and built by mechanics of the Department of Streets. 6. Aerial fire truck, partly raised. 7. Motor pumper with a capacity of 10,000 gallons per minute

\$23,727.41 for gasoline, \$2,452.92 for oil, \$8,540.68 for tires, \$13,385.10 for payroll, and \$13,865 for materials.

Use of Cars by Departments

The maintenance of the passenger cars of the Department of Streets and Public Improvements cost the city \$72,662.90, and two motor-cycles cost \$493.50. All of these are used by employees in the work of the Department and are kept at the garage, where a system of checking in and out is maintained. Each car user signs for his car when it is taken out and returned.

One lone car, a limousine, constitutes the motor equipment of the Department of Revenue and Finance. In addition to being used by the Director of Revenue and Finance, the car carries the funds of the department to the 17 banks and trust companies in which deposits are made. The insurance carried by the Department specifies that the insurance company will be responsible for loss of money only when carried in this particular car. The car is also used by members of the City Tax Board and for carrying County Tax Board members when inspections of city property are made by that body. The hiring of outside cars for the use of the taxing body or for others in the Directors' Department is absolutely forbidden, and the sole automobile expense of the Department is centered in this car.

A charge of \$9,632.30 was incurred by the Mayor's Department, which includes the Health Department, the City Hospital and the Almshouse. The Mayor has one car for his exclusive use. In the Health Department one car is used by the Executive Division, one by the Food and Drug Division, and a motor-cycle by the Laboratory Division. A motor-cycle is also used in the Sanitary Division and, inasmuch as no car is owned by the Department for the Veterinary Division, the head of that department is allowed \$720 a year for the use of his car. A truck, two touring cars and a suburban body light car are listed for the Almshouse; four ambulances and the car used by the Mayor are maintained at the City Hospital garage. The four ambulances made 4,740 calls during the year.

The Department of Parks and Public Properties has no garage of its own and hires outside quarters for its four cars.

Only one of these is used by the Director; two are used by the Division of Weights and one by the Shade Tree Division.

In the Fire Division of the Department of Public Safety, there are 67 motor vehicles of various kinds, the total cost of up-keep for 1922 being \$27,814.79. Ten roadsters are used by the Chief, Deputy Chiefs and Battalion Chiefs, and the repair shop where the overhauling and repairing of the equipment is carried on. Sixteen tractors are used to pull hook and ladder trucks, steam fire engines and a water-tower. A runabout is used by the telegraph system employees, and two trucks are employed for hauling purposes, one being a combination wrecker. The rest of the equipment is made up of 23 combination pumping chemical and hose cars, 4 combination chemical and hose cars, 4 aerial hook and ladder trucks each carrying 75-foot ladders, and 5 chassis for combination chemical and hose wagons. The 16 tractors are divided, 7 to steam fire engines, 8 to hook and ladder trucks and 1 to a water-tower.

The up-keep of the 28 automobiles in use by the Police Department, over half of which are used on patrol duty, was \$15,406.83, which includes supplies, oil and gas, repairs and extra equipment. The 42 motor-cycles all used exclusively for police duty, cost \$5,325.76 for maintenance, gas, oil and equipment. Of the cars not used in patrol work, 4 are used by the department heads, the Chief and Deputy Chief each having a runabout and a touring car. One car is used by the Board of Public Safety. The others are used for various department affairs, such as emergency patrol and repairs.

The Building Department, also under the Safety Department, has two cars for the 10 inspectors. In the Electrical Inspection Division, which is under the Department of Safety, 4 of the 7 inspectors alternate in the use of 2 of the 3 cars in the Department in their inspection work. The third car is used by the Superintendent for extra inspections, appointments and trouble work. This car is frequently used during the morning by one of the inspectors. All the cars were purchased three years ago, and consequently the up-keep is increasing rapidly.

The cars in use by the Board of Education include a 7-passenger sedan for the use of the Board, a light sedan and 4 trucks

for the Business Manager's Department, a coupé and 2 trucks in the Department of Supplies, and 2 auto busses for the transportation of crippled children to and from school.

Length of Service

Most of the cars in use by the city government were purchased in the last three years, although 7 purchased in 1914 are still in use. It is the policy of the various departments when new cars are necessary, to trade in the old car and allow

its value to be credited against the new purchase. By years since 1914, the purchases have been as follows: in 1916, 1 car; 1917, 2 cars; 1918, 8 cars; 1919, 21 cars; 1920, 42 cars; 1921, 31 cars; 1922, 35 cars.

One ambulance was purchased in each of the years 1919, 1920, 1921 and 1922. It is expected that a fifth will be purchased this year, so that the use of police patrol motor vehicles will be eliminated in carrying persons that have been injured to the City Hospital.

What Municipal Forests Should Be in the United States

FOR over 1,000 years, the Sihlwald Forest in Switzerland has been supplying the city of Zurich with wood. This is the result of orderly and intelligent forest management, and it simply means that hundreds of years ago the people of Zurich had learned one thing that we do not seem to appreciate, namely, that we cannot cut our forests off and still have an adequate lumber supply.

The *American Bulletin* states that there are places in Minnesota and Wisconsin, citing two instances, where one can travel for miles through ghastly stumpage land which was cut over twenty or thirty years ago, and which, if reasonable provision had been made for natural reseeding, and if the slashings of logged-off trees had not been left lying around to start brush fires and to kill off the few seedlings that did manage to get a start, would to-day support a second growth of timber almost ready to sell. Much of this logged-off land is suitable for little else than forest growth. The top soil is shallow and rocky and there are thousands of acres which have grown nothing of any value since the trees were cut off.

The truth is, we Americans have behaved with our natural resources much like a flock of children released with carte

blanche in a candy shop. In less than fifty years we have swept away forests which cannot be replaced even to a small degree inside of several generations, and so far most of the efforts made to repair some of the damage have been ineffective.

It is ineffectual to pick flaws in any system—or lack of system; the effective thing to do is to point out a remedy. Inasmuch as we in America are supposed to react to slogans, why not adopt the slogan, "Remember the Sihlwald"? Remember that since the days of King Ludwig in the year 853, the Sihlwald has been producing timber and that, since 1460 at least, there has been an orderly supervision of cutting and replanting. To-day this forest supports a small, yet thriving, woodworking industry. A small mill is operated and lumber, railroad ties, tool handles, stakes and poles are turned out in respectable quantities, not to speak of a considerable production of excelsior.

Clear-minded, far-sighted municipal officials in the United States should begin to "Remember the Sihlwald" and the principle exemplified by its thousand-year production record. If they will only consider this seriously, we may look for something practical and effective in the way of forest regulation and production.

Plan to Plant Another Tree

This is the title of the Official Bulletin of the Tree Savers Association of America, Volume I, Number 1 of which has just been issued. Address the Secretary of the Association, J. A. Young, 53 South La Salle Street, Aurora, Ill.

Forward Steps in Municipal Affairs

An Improved Safety Zone

DETROIT, MICH.—A new type of safety zone, and one which is believed to be an improvement in many ways over those previously used, has just been constructed in Detroit. It consists of a row of very heavy wrought iron posts, 6 inches in diameter, set into the pavement. These posts stand about $3\frac{1}{2}$ feet above the pavement, and are set 8 feet apart.

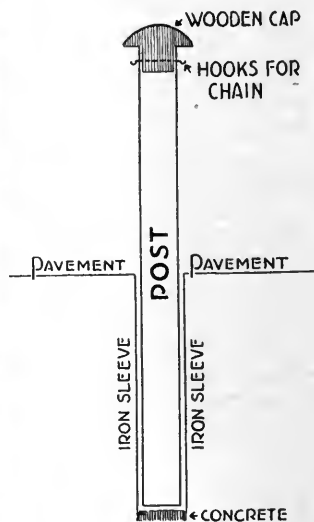
The zone is 5 feet wide by 88 feet long, which is the full length of the space where the street cars, including the trailers, receive and discharge passengers. To prevent autos from running through the safety zone a post is set close to the car track, and to eliminate any danger of accidents caused by autos running into the posts, a bright green light burns on a tall post at the end of the safety zone. The post which carries this light is offset from the line of posts forming the safety zone, so that in case any one should strike the end post with some vehicle heavy enough to bend or break it, the lamp-post would probably escape injury.

A great many vital accidents have occurred in the past because autos dashed through safety zones marked off with paint on the pavements. The raised concrete safety zones have been found very efficient, but the cost is so great as practically to prohibit them except at the most important corners. It is thought that the new type affords as much protection as the concrete, if not more, and the cost is only a small fraction of the cost of the concrete. The cost of a concrete safety zone of similar size is about \$1,600, while the new type costs slightly less than \$400.

The posts were set in the following manner: After the pavement was cut through, holes were bored to a depth of slightly more than 3 feet, and a little concrete was poured into the hole; then an iron sleeve 3 feet long and 7 inches in diameter was dropped into it, and more concrete was poured all around outside of this sleeve. The posts, which are 6 inches in diameter, drop into this outer sleeve, thus being removable at any time, as they are not cemented or otherwise fastened in any way. These wrought



NEW SAFETY ZONE AT WOODWARD AVE. AND GRAND CIRCUS PARK, DETROIT



HOW THE SAFETY ZONE STANDARD IS BUILT

iron, hollow posts are 6 feet long, which makes them extend 3 feet above the pavement, but each is capped with a wooden plug, rounded, which gives the posts a more finished appearance and also serves to keep water from getting into them. A bolt extends through the post and through the plug, holding the plug in position and also providing a hook on each side of the post upon which to fasten the $\frac{1}{2}$ -inch wrought iron chain which connects them. This plug adds nearly 6 inches to the height of the post.

The skip-stop method is used with the street cars in Detroit, and there is always the possibility that it may be necessary for some reason to change the location of the stop. This would cause a great deal of expense if the concrete platforms were in use, for the cost of removing one of these is nearly as great as that of building it. With the new type, however, it is a simple and inexpensive matter to change the location. The lamp-post is bolted to the pavement, but the wiring is attached only by means of a slip connection beneath the base, so it, too, can easily be moved. It is estimated that the whole safety zone could be entirely removed in about one hour. Thus it could be removed to clear the way for parades or to facilitate the movement of fire-fighting apparatus in case of a large conflagration.

The time of six men for two days was required to build this zone, which was designed by the Department of Public Works. It is the first of its kind in Detroit, and so far as is known there are no similar installations in any other city.

JOSEPH A. MARTIN,
Commissioner of Public Works.

A Vehicle Pound for Traffic Violators

GRAND RAPIDS, MICH.—What is known as a Vehicle Impounding Ordinance is in effect in Grand Rapids. Its object is to provide a means of enabling the minor traffic violators to pay a fee in lieu of being ordered into the police court, and without loss of time incident to court proceedings.

The ordinance provides that there shall be a vehicle pound designated and an officer or officers to operate it. Vehicles parked in violation of the ordinance may be removed to the pound, or the officer witnessing the violation may post or attach a notice to the

vehicle, charging the driver to pay to the officer in charge of the pound the same fee as though the vehicle had been impounded. If he fails within forty-eight hours, complaint is made in the police court charging him with violation of the ordinance.

The penalty for the first offence is \$1; second offence, \$3; third offence, \$5, and thereafter at the same rate until January 1 of each year, when a new start is made.

This ordinance has been in effect since January 11, and is proving very satisfactory.

FRED H. LOCKE,
City Manager.

Collecting Cemetery Maintenance Assessments

FRANKLIN, VA.—In Franklin no tax for cemetery maintenance is allowed by the state. We have tried for years to collect an assessment from the owners of cemetery lots. Some pay—some refuse—and some have moved away, address unknown. Our old Poplar Spring Cemetery sold lots cheap without provision for up-keep. In an effort to force payment, we have adopted an amendment to the cemetery ordinance containing the following provisions:

All owners of lots in Poplar Spring Cemetery shall have the same cleaned of all weeds and high grass at least once during each month from April 1 to December 1, of each year.

All such owners failing to comply with this ordinance, after ten days' notice from the keeper of the cemetery, either personally, or by mail, or by notice in a newspaper published in the town of Franklin, shall be subject to a fine of \$5, and in addition thereto the keeper may cause such lots to be cleaned at a cost not exceeding 50 cents for half-lots and \$1 for whole lots for each time, which amount shall be charged against the owner of said lot, to be paid as a fee to the town of Franklin before any burial permit shall be granted for any interment in said lot. Provided, however, that this section will not apply to any owner of a lot who has paid the annual assessment of \$3.50 for half-lots and \$6 for whole lots for cemetery maintenance purposes, or has paid to the maintenance fund the amount of \$60 for half-lots or \$100 for whole lots, to be placed in a special town account and the earnings of which fund shall be used for perpetual up-keep of such lots.

Does any reader of THE AMERICAN CITY know of a better way to meet this problem of cemetery maintenance?

H. L. BEACH,
Town Manager.

Traffic Lights and Zone Markers in Richmond

RICHMOND, VA.—“Mushroom” traffic lights have been found quite effective in Richmond in regulating traffic at congested corners where, on account of our limited police force, we are unable to place traffic officers. The lights have materially lessened the number of accidents and have eliminated the bad habit automobile drivers have of cutting corners, the signal directing them to make the proper turn around the center of the street intersection. The “mushroom” is visible both day and night, is not unsightly, and if accidentally hit, is not easily damaged.

In addition to the mushroom traffic lights, we are using a number of mushroom zone markers. These are of the same type of construction as the traffic light, but are smaller in size and cost less to procure and install. We are using the latter where streets come to a dead end and at exceptionally dangerous street intersections where we require traffic to come to

a full stop before crossing or entering the intersecting street. In such cases we use two of the zone markers, placed in the center of the street, one on each side of the intersecting street on a line with the intersecting property line. The word “Stop” is



INTERSECTION OF GRACE AND ALLISON STREETS, RICHMOND, VA., WHERE, BY THE USE OF THE ZONE MARKER AND THE “FULL STOP” REGULATION, ACCIDENTS OF SEVERAL A DAY HAVE BEEN REDUCED TO PRACTICALLY NONE

be painted on the roadway in front of each of the lights and may be easily read by drivers of vehicles moving in either direction, day or night. The street light illuminates the sign at night, and the red light from the zone marker calls attention to it.

WILLIAM M. MYERS,
Director of Public Safety.



BY THE “FULL STOP” REGULATION AND THE TRAFFIC LIGHT PLACED AT THE INTERSECTION OF GRACE AND BELVIDERE STREETS, WHERE BUS AND JITNEY LINES MAKE TURNS, THE DANGER OF ACCIDENT IS GREATLY REDUCED

THE DETROIT DEPARTMENT OF STREET RAILWAYS

A series of seven bulletins entitled, “What Was and What Is on the Street Railway System,” has been prepared by Walter Jackson, consultant, showing the condition of the Detroit street railways property when taken over from the Detroit United Railways, and the condition of the property to-day under city ownership; comparing the municipal standards with those of the American electric railway industry at large, and making suggestions for future improvement. Apply to the Department of Street Railways, Detroit, Mich.

Chicago's New Manhole Cover

Designed by a Member of the Bureau of Sewers, It Has a Reversible Curb Which Can Be Changed Without Damage to Pavement

A NEW manhole cover in three pieces—base, ring or curb, and lift—has recently been designed in which the curb can be reversed without tearing up the adjacent pavement after the ledge supporting the lid has been appreciably worn. The new manhole covering is the result of a hunt for a lighter design and a stronger one than the old standard one used for more than twenty-five years by the Chicago Sewer Department.

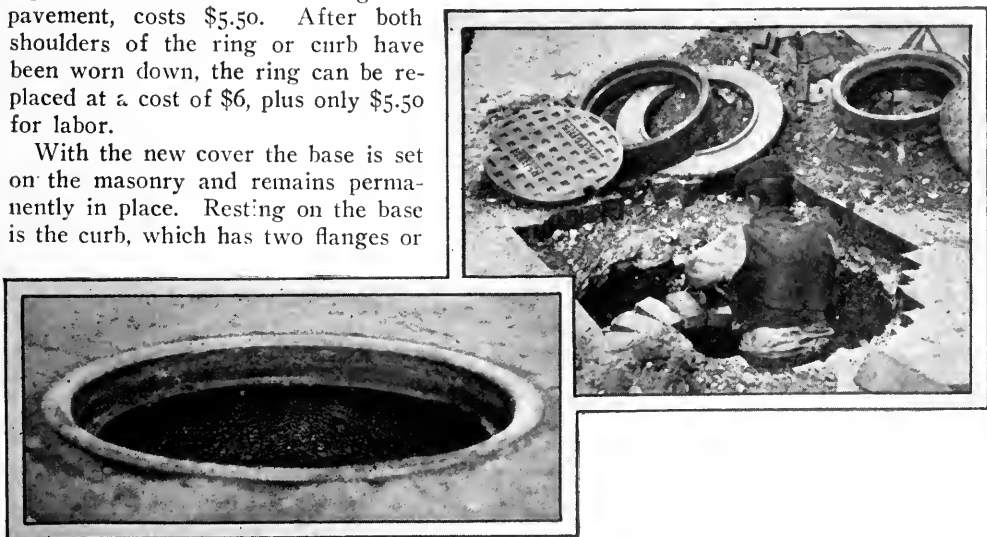
The new cover is about 90 pounds lighter than the standard design which it replaces. The cost of restoring the pavement in replacing worn-out two-piece covers has been very high, since for a minimum pavement repair the charge is \$20. In downtown districts this repair work required one bricklayer, three men, and a team at least half a day. Installation of covers or replacements of the old type, including the charge for restoring pavements, costs an average of \$56.50. The first replacement of the new reversible type, which means simply prying out the metal curb and turning it over without disturbing the pavement, costs \$5.50. After both shoulders of the ring or curb have been worn down, the ring can be replaced at a cost of \$6, plus only \$5.50 for labor.

With the new cover the base is set on the masonry and remains permanently in place. Resting on the base is the curb, which has two flanges or

ledges exactly alike, either one of which may be used to support the lid. This feature doubles the life of the cover and saves the adjacent pavement. Reversing the ring and hammering the pavement into place with a maul can be carried out within a few hours in a traffic-congested district without interrupting the continuous line of traffic on either side of the street.

Tests of New Manhole Cover

For testing the manhole curbs a heavy cast-iron base was provided, with the top grooved to receive the manhole curb casting. The curb fits the base close enough to prevent any lateral movement of the curb. A layer of riddled sand 1 inch deep was placed between the base plate and the casting under test, to insure an even bearing. The anvil was a heavy casting with the base machined to fit the curb in place of a standard lid. After each drop of a 1,200-pound weight at various distances, the casting was inspected for any cracks or distortions of metal which were con-



SOLVING THE PROBLEM OF MANHOLE CASTINGS IN CHICAGO

At left.—Worn-out manhole curb showing where flange is thin and broken. At right.—Replacing a worn-out Chicago standard manhole curb with new reversible curb on East Monroe Street, west of Michigan Boulevard

sidered the point of failure. Castings of the different designs were poured from the same ladle to make the tests comparative. For curbs the drop started at 6 feet and was increased by 1-foot increments until the casting broke or the limit of the electric hoist, 17 feet, was reached. For lids the test was started with a drop of 18 inches, which was raised by 3-inch increments until the casting failed as a result of the repeated blows.

Heavy lids weighing 155 to 158 pounds

broke at a load of 3,300 foot-pounds. All lids broke at the same height of drop, but the lighter sections deflected under the blow, and the weight rebounded after striking. Before breaking, the medium lids dished $3/16$ - to $1/4$ -inch at the center.

The new three-piece manhole cover was designed by Frank Shanley of the Chicago Bureau of Sewers. The test of the strength of covers was made at the plant of the Campbell, Wyant and Cannon Foundry Company, Muskegon, Mich.

Three Desirable Qualities in Street Lighting

A STREET-LIGHTING fixture should be inconspicuous by day and sink into its surroundings. No safer rule for selecting standards can be laid down, simply for the reason that in nineteen cases out of twenty there is not enough money available to give the standards such decorative value in themselves as justifies conspicuousness. There are, of course, delightful exceptions to this rule, particularly in the best foreign practise, as witness some exquisitely decorated standards along the Quai de Mont Blanc in Geneva and, for that matter, along the Thames Embankment. Generally speaking, rigid economy must be exercised in choosing the fixtures, and the most that one can fairly ask is that results shall be agreeably self-effacing. This furnishes a telling argument against the use of clusters.

In many situations it is desirable to allow a modest amount of light to turn upward so as to show the façades of the buildings. This assumes that the façades are of such character that they deserve to be lighted, which is not always the case. A rule always sound is that the intensity of illumination should be graduated in accordance with the situation, and this, with the present-day equipment of incandescent lamps, is a comparatively simple matter. It is much easier to hold a reasonable spacing and vary the illumination through the size of the lamp than it is to attempt to obtain a similar variation by changing the spacing. Occasionally both size and spacing must be changed, as when lamps are used merely as

markers along unfrequented streets. In general terms, two or three sizes of lamps are sufficient to give an adequate gradation of illumination on an incandescent circuit, and the usual arrangement of compensators gives facilities for providing sufficient variety of luminous output while retaining conveniently the same standard amperage on the circuit. At present the installation of underground circuits for the street-lighting service is simpler than in the old days, when a somewhat elaborate system of conduits had to be provided. Since the introduction of the steel-armored, lead-covered cable which can be laid in a shallow trench, underground service has been cheapened and simplified so that it is available in many districts where before overhead wires were a virtual necessity.

With suitably spaced lamps, it is often worth while to consider the possibilities of dividing the system into two circuits, one operating all night and the other until midnight or 1 o'clock in the morning. If this plan be skillfully worked out, it not only reduces considerably the cost, but it does so in a strictly sensible and logical manner. In other words, it provides illumination which bears some relation to the hours of heavy traffic. Many a street requires the highest grade of lighting until, let us say, after the theater, and from that time on the needs are greatly reduced. In any event the split circuit operated in the way described is a vast improvement over that petty and mean economy, the moonlight schedule.

—*Electrical World.*

The Disposal of Municipal Refuse in Iowa

By Earle L. Waterman

Associate Professor of Sanitary Engineering, State University of Iowa

THE collection and disposal of municipal refuse is essentially an engineering problem which receives but little attention from municipal engineers. The garbage and refuse problem is one which concerns the comfort, convenience, and health of the citizens of a municipality.

The elimination of nuisances to sight and smell caused by decaying garbage and unsightly piles of refuse around the home adds to comfort; the provision of receptacles for household wastes and the periodical emptying of them by collectors adds convenience; and the proper removal of these wastes reduces the health hazards that are present when this material is allowed to accumulate. The problem is one which should come under the public work or engineering department rather than the health department. The satisfactory solution of the wastes problem of a city calls for the same thorough preliminary study of existing conditions, the same degree of care in planning its solution, and the same careful supervision of its operation as does the problem of sewerage and sewage treatment.

Just as the sewerage system is designed to remove waste waters from individual homes, the garbage and refuse collection system should function to remove those wastes which are not water-carried, such as kitchen wastes, table refuse, waste paper,

tin cans, ashes and manure. The first two items are usually classified as garbage, and the others as refuse. These solid wastes are just as much the by-products of living as the water-borne wastes which we call sewage. Their removal from the premises

adds to the comfort and convenience of the people living there and helps to keep their environment clean—one of the first requirements of healthy living. Methods of house treatment, collection of garbage and refuse, and the disposal of them in such a way that they will not create a nuisance or be a menace to public health, do not call for as great an investment in engineering structures as do a sewage system and sewage treatment plant, but the writer believes that they do require careful planning and supervision, and

that their proper solution has much to do with public health and happiness. It is a municipal housekeeping problem, and the municipal engineer certainly should be charged with the municipal house-cleaning work.

The disposal of municipal refuse—and here the term "refuse" is used to include both organic and inorganic wastes which are not carried by water—is a problem which becomes more acute as a city increases in population. In the small towns and cities this problem does not usually assume proportions which demand its con-

Efficient Disposal

Efficient and satisfactory disposal of municipal refuse is the result of careful planning of the house treatment, the collection, and the method of final disposal of system wastes which are not water-carried. It is an engineering problem and should be recognized as such by both the public and the municipal officials.

The disposal of municipal refuse is not usually recognized as a municipal problem in Iowa cities of less than 15,000 population. In the smaller cities and towns the disposal of such wastes is left to the individual householder. The results are frequently unsatisfactory from a community standpoint.

Information concerning the methods of collection and disposal of municipal refuse in seventeen Iowa cities of over 7,000 population is given. Local conditions determine the methods to be used. The cost per capita varies with the extent of the service, the classes of refuse collected, and the method of disposal used.

sideration from a community standpoint; it is rather one for solution by the individuals. The results obtained are not always satisfactory from a community standpoint, since the individual methods vary with the intelligence and resources of the householder who is attempting to solve the problem, and are adopted to meet individual rather than community requirements. The methods commonly used include burning, burying, throwing out on the ground, and, most frequent of all, feeding to hogs and chickens. The majority of these methods are good when properly employed, but it is often the case that they are more satisfactory to the person using them than to his neighbors. An intensive house-to-

Census. It is interesting to note in the second column of the table that in the thirteen largest cities of the state—all cities having a population of over 16,000—the garbage collection is done by city employees or by a contractor for the city. Most cities have garbage ordinances which prescribe that garbage cans, of proper size and having tight-fitting covers, shall be set out at the rear of the house or at the alley for the convenience of the collector. Collections are made once or twice a week in the winter and two or three times each week during the summer months. In Clinton, Burlington and Muscatine, garbage collection service is furnished by the city only during the months of May to October, inclusive.

THE COLLECTION AND DISPOSAL OF MUNICIPAL WASTES IN IOWA CITIES

| City | Population | Collection Made by | Wastes Collected | Method of Disposal | | | Costs per Capita for Yr. 1921 | Paid by |
|-----------------|------------|--------------------|------------------|--------------------|---------------|-------|-------------------------------|---------|
| | | | | Garbage | Refuse | Ashes | | |
| Des Moines.... | 126,468 | City | Garbage | Burned on dp. | | | \$0.54 | Tax |
| Sioux City.... | 71,227 | City | All wastes | Fed to hogs | Dump | Dump | 0.71 | Tax |
| Davenport.... | 56,727 | City | All wastes | Sanitary fill | | | | |
| Cedar Rapids.. | 45,566 | City | Garb. and ref. | Sanitary fill | | | 0.38 | Tax |
| Waterloo..... | 36,230 | Contractor | All refuse | Fed to hogs | Dump | Dump | 0.60 | Tax |
| Council Bluffs. | 36,162 | City | Garb. and ref. | Incinerator | | | | Indiv. |
| Clinton..... | 24,151 | City | Garbage | San. fill | | | 0.13 (5 mos.) | Tax |
| Burlington.... | 24,057 | Contractor | Garbage | Buried | | | 0.29 (6 mos.) | Tax |
| Ottumwa..... | 23,003 | City | Garb. and ref. | Incinerator | | Fill | 0.35 | Tax |
| Mason City.... | 20,065 | City | Garbage | Incinerator | | | 0.35 | Tax |
| Ft. Dodge.... | 19,347 | Private col. | Garb. and ref. | Fed to hogs | Dump | | | Indiv. |
| Muscatine.... | 16,068 | City and cont. | All wastes | Fed to hogs | Sanitary fill | | 0.26 (6 mos.) | Tax |
| Keokuk..... | 14,423 | Private col. | Garbage | Fed to hogs | | | | |
| Boone..... | 12,451 | Private col. | Garbage | | | | | Indiv. |
| Iowa City.... | 11,267 | Contractor | Garbage | Fed to hogs | | | 0.14 | Tax |
| Oskaloosa.... | 9,427 | Private col. | Garbage | Fed to hogs | | | | Indiv. |
| Creston..... | 8,034 | Private col. | Garbage | | | | | Indiv. |

house sanitary survey in a town of 900 population showed that the kitchen garbage was disposed of as follows:

| Method | No. of Instances |
|-----------------------------------|------------------|
| Fed to chickens or hogs..... | 118 |
| Burned..... | 40 |
| Thrown out on the ground..... | 15 |
| Partly fed and partly burned..... | 13 |
| Taken by collector..... | 12 |
| Buried..... | 1 |

Other surveys made by the writer indicate that this summary is a typical picture of the garbage situation in the average Iowa town and small city.

Except in small residential suburbs adjacent to a large city, the problem very rarely receives community attention in cities of less than 5,000 population.

The costs per capita of municipal refuse collection and disposal as shown in the following table have been computed on the basis of the 1921 expenditures in each city and the population as recorded by the 1920

Four cities report that the collection of municipal refuse is a matter of private enterprise. Although definite information is not at hand, it is quite probable that in these cities there are ordinances which regulate the manner of disposal of the wastes. As indicated in this table, there is only one city of less than 15,000 population in which the collection of municipal refuse is handled as a community problem, and only in the larger cities is refuse other than garbage collected by the municipality.

There is some variation in the extent of the collection service in per cent of area of the city. Des Moines reports less than one-half, but practically all thickly settled portions; Sioux City and Cedar Rapids, 75 per cent; Clinton, 66 per cent; in Waterloo, Council Bluffs, Burlington, Ottumwa and Mason City practically the entire area is reached by the collection wagons. The character of street surface and the location

of alleys seem to have some influence on the extent of the service. In some cities it is almost impossible to get uninterrupted service if the house is located on an unpaved street. In other cities where the collection wagons use the alleys, the service is not furnished to property which abuts on an alley that is not cut through from one street to another. Density of population is another factor which is taken into consideration by city officials in planning the extent of the collection service, since the thinly populated outskirts are frequently not given the service.

In considering questions of collection and disposal, municipal wastes are divided into three classes—garbage, refuse and ashes. As will be noted in column 3 of the table, some cities collect all three classes, others only garbage and refuse, and some only garbage. Unless the refuse and ashes are used in connection with the disposal of the garbage, it appears that the collection of these municipal wastes is not considered a public responsibility. In some cities the street department will remove refuse and ashes upon request, but the cost of the service is charged to the householder. For many of the small cities and towns in the state, "Clean-up Week" is an annual affair. These campaigns are held in the spring, when householders are urged to place all refuse and ashes either at the street curb or near the alley where city teams can reach them. This work is usually done at public expense and is a satisfactory method of cleaning up the winter accumulations of ashes and refuse in small municipalities.

Methods of Disposal

The methods of disposing of the municipal wastes in Iowa cities comprise feeding to hogs in 7 cities; incineration in 3 cities; making a sanitary fill in 3 cities; and burning on a dump in 1 city. Refuse is burned in an incinerator in 2 cities, and disposed of at city dumps in the other instances reported. Ashes are used for filling streets in 1 city, and used in connection with sanitary fills at other places.

Feeding to hogs.—In most instances where the municipal garbage is fed to hogs, the hogs are owned by private parties who are either contractors collecting the garbage or individuals who receive it from the collectors. In Waterloo and Ft. Dodge private

companies collect the garbage and use it for hog-feeding. Sioux City is the only municipality in our list which owns its own hogs and hog farm.

Sanitary fill.—In some of the cities in Iowa both garbage and refuse are used for filling in low land. This method is economical and satisfactory where it is properly done—but a cause of many complaints when it is not carefully planned and executed. It is reported as being satisfactory at Davenport, where low land along the Mississippi River is being filled and reclaimed. Here piles of ashes and dirt are spaced along the top of the embankment so that there is just room for the garbage wagons to back in between the piles and discharge their loads of garbage on the face of the bank. As soon as the wagon is pulled out, men with long-handled shovels cover the garbage with 8 to 10 inches of earth and ashes. Approximately 2 cubic yards of covering are required for each 1½ cubic yards of garbage. It is occasionally necessary to obtain cover material from outside sources, as the amount normally coming to the dump is not always sufficient.

Incineration.—In Council Bluffs, Mason City, and Ottumwa, incinerators are used for the disposal of municipal wastes. This method has also been used in Des Moines, but it is reported that "the operation of the incinerator has been abandoned because of excessive costs." Costs of operation as reported for Mason City and Ottumwa do not appear to be excessive. In Council Bluffs the cost of service is paid by the people for whom the service is rendered, and not by a tax levy, as is the case at Mason City and Ottumwa. The City Clerk at Council Bluffs states that the incinerator in that city has been in operation for several years and that as far as the garbage problem is concerned they consider that it is satisfactorily solved. The State Sanitary Engineer makes the following comment on the Council Bluffs incinerator:

"All the garbage and refuse, except ashes and tins, is hauled to an incinerator and burned. From 65 to 75 pounds of coal is used per ton of garbage, and they have no trouble. The incinerator is located very near the residential district, and it is so clean and so free from odor that you would not know it was there unless you saw it."

Costs of Collection and Disposal

Two methods of financing the collection and disposal of municipal wastes are used by Iowa cities. Some cities meet this expense by a general tax levy, while in other cities the service is paid for by the individual householders. Unless the service is general, covering the entire city, it might well be argued that the costs should be met by those who are benefited. At the same time it will be generally admitted that there is a benefit accruing to the general public even though only a part of the municipal wastes are removed.

The figures given in the next-to-last column of the table have been computed on the basis of the annual expenditures for the collection and disposal of municipal wastes as

reported by city clerks, and the populations of the respective cities as shown in the 1920 U. S. Census reports. There is a considerable variation in the costs per capita for all-the-year service—the maximum being \$0.71 in Sioux City, and the minimum \$0.14 in Iowa City. These differences are undoubtedly due somewhat to local conditions and depend also on the extent of service. A very complete service is evidently given at Sioux City, where all classes of municipal wastes are collected and disposed of by the city. In Iowa City only the garbage is collected, and this service covers only a part of the city area and is reported as not being satisfactory.

ACKNOWLEDGMENT.—From a paper read before the Iowa Engineering Society.

Advice from Alger County, Mich., on Keeping Roads Good

Maintenance of improved roads has often been neglected.

As a result, costly improvements have gone to ruin.

Insufficient funds for maintenance have been largely to blame.

No financial oversight can be more disastrous than failure to provide for our improved highways.

The character and volume of traffic determine the type of road to build, provided adequate maintenance is assured.

Economy, therefore, can be had only when proper maintenance is guaranteed.

No part of highway work requires more skillful supervision than maintenance.

Aslipshod method of maintenance will ruin the best of roads.

Nowhere is there a greater field for application of sound business principles than in public highway maintenance.

Constant attention to detail, combined with close study, produces efficiency.

Efficient maintenance—the secret of public highway success.

Modern Jet Condensers in Small Lighting Plants

By R. E. Hellmer

Engineer, Condenser Department, Schutte & Koerting Company

EDITORIAL NOTE.—Condensing equipment is essential to the economical operation of a steam power-plant. For the purpose there are many makes of condensers, but all can be grouped into two classifications—surface condensers and jet condensers. The question as to which is the better type to employ in a particular power-plant should be determined wholly by the operating conditions that exist at the plant.

CONDENSERS are generally classified into surface condensers, in which the exhaust steam and the condensing waters are kept separated by the heat-transmitting surfaces; and jet condensers, wherein the steam comes into direct contact with the water. The condensed steam, water, air, and other non-condensable gases are removed by suitable pumps or a barometric column, or by means of the kinetic energy of water jets.

The choice of a condenser depends primarily upon the quantity and quality of

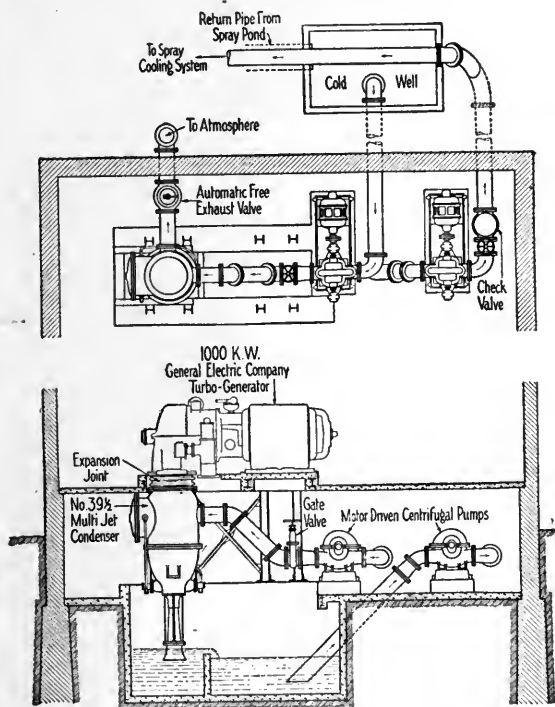
water available for condensing purposes. Where there is an abundant supply of fresh water that is sufficiently pure for boiler feeding purposes, the most suitable type of condenser to install is some form of jet condenser. Under these conditions, such a condenser is probably the lowest in first cost and the most economical in operation.

The surface condenser is ordinarily chosen in instances where there is an abundant supply of cheap feed. If the feed water must be drawn from the same source of supply, a water softening or purifying plant or an evaporator is necessary to make up the loss of feed water due to leakage.

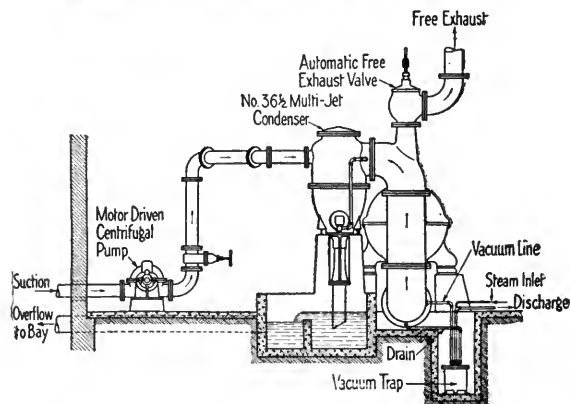
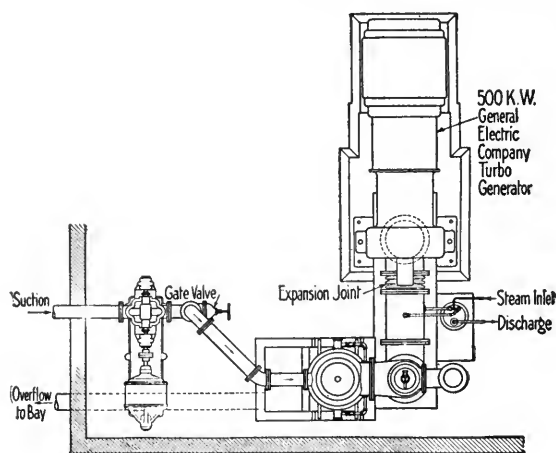
If the water-supply is limited but of good quality for boiler feed, a jet condenser would probably be the best one to install, together with some form of recooling plant of sufficient capacity to reduce the condensing water temperature to a point low enough for continuous working. By limited supply is meant a supply that is not sufficient in quantity to be discharged to waste, and relatively expensive to obtain.

Where there is a limited supply of water, unsuitable for boiler feed, a surface condenser should preferably be installed and operated in combination with a water cooling plant of ample capacity for continuous working, and with a water softening or purifying apparatus to make up the loss in boiler feed.

The illustration on this page shows the arrangement of a 1,000-kw. jet condenser serving a General Electric turbine-generator unit in-



PLAN AND ELEVATION OF JET CONDENSER CONNECTED TO A 1,000-KW. TURBINE-GENERATOR IN THE MUNICIPAL ELECTRIC LIGHT PLANT, LANSDALE, PA.



JET CONDENSER MOUNTED ABOVE THE FLOOR LEVEL AND CONNECTED TO A 500-K.W. TURBINE-GENERATOR IN THE MUNICIPAL ELECTRIC LIGHT PLANT, EDENTON, N. C.

stalled in the municipal electric light plant, Lansdale, Pa. The condenser is designed to handle 22,000 pounds of steam per hour, and to produce a 27-

inch vacuum with 95 deg. F. water. It is located immediately below the turbine exhaust and is connected to the turbine by means of a copper expansion joint as shown. The diagram clearly illustrates the arrangement of the motor-driven injection and spray pumps. The condenser injection pump takes its suction from a cold well outside the power-house. This cold well is supplied with water from a spray pond located 300 feet away. Provision is made to maintain the water in the hot well at the desired level by means of float-controlled valves and switches.

The second layout represents the condenser installation at the municipal electric light plant, Edenton, N. C., and shows a 500-kw. G. E. turbine-generator connected to a multi-jet condenser with motor-driven pump. The absence of a basement and the fact that the tide water from the adjoining bay rises to within two feet of the turbine room floor, made it necessary to place the condenser above the floor line in order to provide for the gravity of the hot-well overflow to the bay. The exhaust loop is drained by means of a vacuum trap installed about three feet below the lowest point of the exhaust pipe.

The municipal light plant, Greenville, Texas, has recently installed a 500-kw. G. E. turbine-generator and multi-jet condenser designed to maintain a vacuum of 27 in. with 85 deg. injection water.

ACKNOWLEDGMENT.—Abstracted by permission from the *General Electric Review*.

The Cost of Water-Main Extension

ACCORDING to Dow R. Gwinn, President and Manager, Terre Haute Water Works Company, Terre Haute, Ind., it costs a little over \$1.80 per foot to furnish and lay 6-inch Class B cast iron pipe at \$64 per ton. On this basis, the cost of an extension for a block of 365 feet, including the fire hydrant, valves, valve-boxes and a 6-inch tee, is \$829. If it is necessary to cut into a main and insert a special for a connection, the cost is

greater.

The cost of connecting new lines with existing mains is sometimes overlooked. It is expensive to shut off a main, cut a piece out of it, pump out the water that is in the main, insert a special, cut a piece of pipe to close the gap, put on a sleeve, and make four lead joints. It sometimes happens in Terre Haute that the water from the pipe softens the earth so that there is a caving of the bank.

Notable Features of Detroit's Fire Alarm Equipment

By Louis Gascoigne

Superintendent of Fire Alarm Telegraph, Detroit, Mich.

THE completion of the new fire alarm central office in Detroit, in October last, gives that city, it is believed, the best system of protection in the world from the fire alarm standpoint. The type and extent of the central office, the number of boxes on the street, and private fire alarm systems installed by the leading industrial concerns, the list of factories with connection to the city circuits, the protection of the schools, hospitals, theaters and other panic spots, and the high percentage of box alarms support Detroit's claim.

The new central office is located in a beautiful isolated building on the corner of Macomb and Hastings Streets. It is devoted exclusively to fire alarm apparatus and is fire-proof throughout.

The new equipment gives Detroit a capacity of one hundred circuits without additional boards. Eighty of these circuits have already been put into service. The central office has been built sufficiently large to furnish a maximum capacity of four hundred circuits. The relay boards, over which the box alarms are received, and the storage battery switchboards are divided into ten units of ten circuits on

each board. Two ten-circuit gong boards and two ten-circuit joker boards are provided for sending the signals to the engine-houses. Protector boards, with one hundred and forty circuits capacity, guard the central office apparatus against lightning and foreign currents. All these boards are mounted in art metal cabinets with mahogany finish, combining attractive appearance with fire-proof qualities. Twenty five-circuit registers, together with time stamps and take-up reels, are provided for recording signals received from the boxes and also for permanently recording the signals sent out to the engine-houses. Four art metal pedestals are provided for mounting these registers in units of five registers each.

The city has also ordered a new-style keyboard transmitter, which is now in the last stages of completion and will be installed shortly. This new keyboard transmitter represents a very material advance in the art of transmitting signals. It is so arranged that at the first blow of a box alarm the glass which protects the instrument automatically drops down into the base of the transmitter, so that the operator

will not be delayed in getting at the keyboard. It is similar to a typewriter in operation, and after the keys are depressed, the numbers are shown on a dial at the top. It makes possible a speed and an accuracy impossible in any previous transmitter. It can be set for either fast or slow time transmission and has facilities for fifteen code signals.

Every Block to Be Protected

Two thousand boxes have been installed on the streets, which is a greater protection per square mile or per thou-



CENTRAL OFFICE, DETROIT FIRE ALARM TELEGRAPH SYSTEM

sand population than is found in any other city in the country. A definite program has been followed of adding seventy-five boxes to the system yearly, and this is to be continued until the city has the protection of a box a block in all built-up sections. The leading industrial concerns of the city have fire alarm systems which exceed in completeness those of most of the smaller cities of the country. The larger concerns have spent over one millions dollars for alarm systems for the purpose of calling their own private fire brigades. Ford has a twelve-circuit system, with over four hundred boxes, and is equipped with a semi-automatic repeater and the necessary battery equipment. Dodge Brothers has an eight-circuit system, with nearly two hundred boxes, and Cadillac Motor and the Morgan & Wright Branch of the United States Rubber Company have also nearly two hundred boxes each, with the necessary repeaters, switchboards, etc. The General Motors Building, the largest office building in the world, has what is perhaps the most complete system in service anywhere in such a building.

All these systems are for calling the private fire brigades of the various companies. In addition, there are five hundred concerns which have direct connection with fire alarm headquarters, so that they can have the protection of the city fire department in the shortest space of time.

The panic spots, such as the schools, hotels, theaters, and other places where the public congregate, are better protected in Detroit than they are in any other city where records are available. Virtually every one of these places is protected by a fire alarm box that is directly connected into the city circuits, and the value of this protection has been shown by the splendid record that the Detroit Department has made in saving life.

Detroit has, perhaps, the highest percentage of alarms from boxes of any city in the country. This is due to two factors: first,



INTERIOR OF DETROIT CENTRAL OFFICE

sufficient boxes have been installed to make it easy for anyone discovering a fire to send in the alarm; and second, there has been a tremendous amount of educational work with the public to convince them that the fire alarm box is the only safe method of transmitting alarms of fire. The Detroit Board of Commerce in one campaign distributed, through the medium of the Boy Scouts, 125,000 cards showing the importance of using the nearest fire alarm box and giving a detailed account of the method of operation. These were tacked up in over 100,000 homes in the city, and the result from this work has been extremely gratifying to the department.

The system was installed by the Game-well Company under the direction of the Detroit Fire Commissioners, consisting of Charles F. Clippert, William E. Metzger, William J. Chittenden, Jr., and C. Hayward Murphy. The value of this fire alarm protection has been proved repeatedly to the satisfaction of the fire department officials and other city authorities in Detroit. The growth of Detroit and the nature of the manufacturing both tend to result in a high fire loss, but in spite of these natural factors, which should adversely affect the fire loss, there has been a most satisfactory control of it. Detroit believes to-day it is the best-protected fire alarm city in the world, and according to present plans will continue to improve its system, as the city officials appreciate that safety of the lives of the citizens depends largely on the completeness and efficiency of the fire alarm system.

The Value of Water-Waste Surveys

A Collection of Reports Outlining Methods and Benefits

The Results of a Three Years' Survey in Boston, Mass.

By F. A. McInnes

Former Division Engineer, Water Division, Public Works Department, Boston, Mass.

THE city of Boston has contracted for the last three years for water-waste surveys which have covered to date about 600 miles of mains, or approximately 70 per cent of the total length of mains in the city. The work has been done under five separate contracts, covering different sections of the distribution system. The agreement provides that each section be divided into districts; that the consumption of each district be determined for 48 hours; that those districts in which the maximum night rate exceeded the daily average consumption by more than 50 per cent be subdivided; that tests be made of services to all large consumers, to determine possible illegal use of unmetered matter; and that all meters larger than 3-inch be tested for accuracy.

To the end of 1922, 296 separate leaks had been located, 244 of which were in lead services; 44 were blown joints, 2 broken mains and 6 miscellaneous. These leaks ranged in size from a nail hole in a $\frac{5}{8}$ -inch lead service wasting 5,000 gallons per day, to a broken 4-inch pipe discharging 660,000 gallons per day into a trunk sewer. A total of approximately 10,250,000 gallons per day of leakage has been discovered and stopped.

The average daily consumption in Boston in 1922 was 85,098,000 gallons per day, or 112 gallons per capita; in 1920, when the waste survey began, it was 94,297,400 gallons per day. Tests made of large meters show a daily loss through underregistration in excess of 2,000,000 per day, and one case of illegal unmetered service was found. About 70 per cent of the services in Boston are metered.

The survey has cost the city \$67,300, and in addition the city has furnished and in-

stalled the necessary corporation cocks, supplied labor for operating valves, furnished shelter boxes for the protection of the contractor's instruments, and furnished the necessary transportation for conducting the survey.

The method followed in making the survey has been to outline a section and divide it into districts of approximately 30 blocks each. Each district is formed by closing a line of gates around its boundary, supplying it through one pipe only. A recording Pitometer is then inserted into this feed pipe through a 1-inch corporation cock, and a continuous measurement is made of the flow into the district for a period of 24 hours. When an excessive night rate, not accounted for by industrial consumption, is found, the district is supplied through a smaller main at night, and by closing inside and opening outside valves, the boundaries are gradually contracted to the recording instrument in the small pipe feeding the district. As each block is cut out, the drop in consumption recorded by the Pitometer indicates the amount of leaks in that block. To locate the actual leak, different methods are employed: sometimes aquaphones are applied to the service; sometimes microphones or stethoscopes are used on the ground over the pipe; sometimes iron bars are driven down through the ground to the pipe at intervals.

The waste surveys have much more than justified the expense involved, both from an immediate point of view and from a future outlook as well. All gaging stations have been made permanently available, and the city is now in a position to continue the work, which to be fully effective must be continuous and carried on as part of the maintenance work.

Survey in Grand Rapids Untangles Distribution Troubles

By Walter A. Sperry

Director of Public Service, Grand Rapids, Mich.

GRAND RAPIDS has recently completed a water-waste survey which has cost the city about \$10,000 and has covered the entire water-works system of the city. A portion of this work was carried on in 1921 and the remainder has been done since that date. The city was divided into three districts which were natural divisions, the report covering these districts individually.

The local situation has been peculiarly fortunate, since the surveys have revealed practically no large breaks in the water-mains. This is a very unusual feature in that in nearly all cases where surveys have been made, the cost of the survey has been saved to the city in the main leaks detected and stopped. In the case of Grand Rapids this has not been true, but we have found the survey of very great value in the information it has given as to broken valves, valves open that should have been closed, and other similar situations.

There has also existed in this city an unusual condition. In 1919 the city took over the entire property of a water-works system of small capacity whose pipes

were laid parallel to the city pipes and which covered a considerable area that was more or less cross-connected. The records of the company purchased by the city were very inadequate, and the city's knowledge and records were deficient. The water-waste survey succeeded in thoroughly disentangling this condition and gave us an accurate record of the exact condition of this system with reference to itself and its relation to the city mains. This also was considered very much worth while.

It is felt in Grand Rapids that while the water-waste survey did not reveal any leaks, it has been of very great value in the information it has yielded concerning this particular mix-up of pipes and in the general information it has given about the entire system with reference to broken valves, connections of which we had no record, and other conditions of that type. It will enable us to thoroughly revise and bring up to date our water atlases and city maps, and will yield many suggestions of value in improving the general operation of the system and preventing further unknown cross-connections and water losses.

Survey in Detroit Shows Considerable Loss in Small House Meters

By Carl O. Barton

Department of Water Supply, Detroit, Mich.

THE water-waste survey which was recently completed in Detroit covered 1,151 miles of main, 24 inches and under in diameter. It was considered inadvisable to include any mains larger than 24 inches, because these mains were required as feeders, and a few important 24-inch feeder mains were also omitted.

A total underground leakage of 9,557,000 gallons per 24 hours was detected by the Pitometer engineers and repaired by the Department of Water Supply. The two largest sources of water waste discovered

were a 6-inch blow-out off a 42-inch main, which was partly open and which was wasting 750,000 gallons per 24 hours, and a 6-inch main which was broken in two places, wasting 312,000 gallons per 24 hours.

All large meters were tested in the course of the survey. In one case it was found that the Department was losing the revenue from 432,000 gallons of water per 24 hours, because of the underregistration of a single meter. It is estimated that the loss in revenue due to the underregistration of large meters was approximately \$51,000 per

year. The Department is now making regular Pitometer tests of all large meters and immediately repairing those found defective.

The survey demonstrated that considerable revenue was lost because of the inability of many small house meters to register small flows; these meters are now being regularly removed to the meter shop for tests and repair. Many meters were found to be larger than the consumption warranted; all such meters are now being replaced by smaller ones. House waste due to fixture leakage amounted to 22,589,000 gallons per day. The Department's inspec-

tors notified, in writing, each owner of defective fixtures, and made a second inspection in the case of unmetered services, to insure the repair of the fixtures.

In the course of the survey, most of the valves in the system were inspected. A report of valves found defective was filed with the Department, and such valves were immediately repaired. The results of the survey were so satisfactory that since its completion the Department has established its own Pitometer division in charge of an engineer formerly with the Pitometer Company, thus providing for continuous inspection to minimize water waste.

Baltimore City Water Department Finds That the Cost of a Water-Waste Survey Is Justified

THE water-waste survey now in progress in the city of Baltimore was inaugurated in June, 1920. Previous to this, however, much Pitometer work had been done, but owing to the war and the ensuing curtailment in the number of employees, it was necessary to abandon the work. The present survey is larger in the scope of its operation, and the general procedure is applied in greater detail. The water distribution system in the city is divided into three zones, commonly referred to as the Low, Middle, and High Service Zones of Distribution. Low service is fed by a gravity supply from a reservoir, located at the filtration plant, which also serves as suction for the pumping-station supplying the middle service zone. Water for the high service zone is repumped, being lifted from a middle service reservoir to a stand-pipe. As the heavy water consumption, practically 67 per cent of the city, is in the low service zone, all measuring activities are confined at present to that area.

For facility in measuring, the entire low service zone has been divided into a number of areas known as districts, which are in turn subdivided into sections, the units measured at one operation. To date, four districts, totaling twenty-two sections, have been surveyed.

Pitometer surveys are usually considered to be conducted for the sole purpose of saving water; that is, to reduce the daily consumption, with whatever financial gain

that may imply. Although locally the survey was inaugurated primarily for this purpose, it has been our experience that the greatest value of the work has been in other fields. The close examination of the distribution system required by Pitometer surveys permits of much maintenance work which would otherwise be left undone. Aside from detecting broken valves and underground leaks, the survey eliminates dead ends, joints and private pipes, sewer blows, and other minor matters, which, though in themselves of small importance, combine to lower the efficiency of the distribution system and greatly increase the cost of maintenance.

The procedure followed in Baltimore is to completely isolate the section being measured and supply water through one main, the flow on which is recorded. At the same time that this measurement is made, all large meters are read and the consumption of the smaller estimated, so as to divide the total consumption into the domestic and the commercial demand. Following this measurement, the distribution system is subdivided into the smallest possible units, so as to secure a rate of flow on each section thereof. This work is done at night, to eliminate any large draft by consumers. Following this, all plumbing fixtures are inspected, and according to the rates of flow, indicated by the subdivision, investigations are made to locate underground leakage. Following all possible elimination of waste, the final measurement based upon the

initial procedure is made. By comparing these two measurements, all the pertinent information and comparisons can be obtained.

Obviously, before the actual measurement, much investigating and repair work must be completed, thereby benefiting the entire system. In conjunction with the survey, fire hydrants are flowed, to remove any deposited matter and to improve the circulation. With this work as a basis, it is possible to ascertain the general direction in which the water is flowing within the boundaries of the section and to determine which water-mains are overtaxed and should be increased in size, and conversely, which water-mains are delivering very small quantities and are useless to the system. The actual quantity of water which the system is capable of delivering is ascertained by means of flow tests.

It is rather difficult to state exactly in terms of dollars what benefit the city has derived from the survey. Of course, it is possible to make a summation of the various quantities of water saved in each section, and by applying to this quantity an average water consumption rate of 70 cents per 1,000 cubic feet, based upon the recommended schedule of rates for the water department of the city of Baltimore, to compute the equivalent saving. Although such statements are often made to justify the cost of a survey, this method is a fallacy. Here in Baltimore, within certain restrictions, the water-supply is unlimited, in the sense that we have more water to sell than the present consumers demand; that is, we have a continual unsold surplus. The water saved would have the value designated if there were consumers ready to buy the quantity in question. As it is, however, this decrease in the consumption is merely adding to the unsold surplus, and any gain to the city is the cost of impounding, filtering, pumping and delivering this quantity. On this basis the water saved has cut down the cost of pumping and filtering at the Montebello filters \$61.44 per day. A decrease in the water consumption will, however, save money in the sense that it will ward off for additional years the necessity of enlarging the water-works.

How the Survey Helps Other Departments

There is a direct relation between the amount of water consumed in any building

and the amount of sewage and waste water issuing therefrom. In the area now being measured, sewage flows by gravity to a pumping-station which raises it to a point sufficiently high to allow of a gravity flow through the outfall sewers to the disposal plant. Any reduction in the water consumption of this area is therefore directly reflected by a corresponding reduction in the quantity of sewage pumped. In connection with the subject, curves have been plotted showing the total water consumption and the total amount of sewage pumped on corresponding days, the results complementing each other to such an extent that the curves are practically parallel, a reduction in the water consumption being coincident with the reduction in the amount of sewage.

A Pitometer survey may therefore be regarded as financially justified. To the Water Department itself, considering only a reduction in expenses for impounding, filtering and delivering a certain quantity of water, the saving is large. To the taxpayers in general there is the saving effected by deferring for a number of years the necessity for increasing the water-works plant, thus saving the sinking fund and the interest on the capital investment. The Sewer Division of the Highway Department is also benefited by the reduction in its pumping charges.

In all, an area covering 5.93 square miles having 152.74 miles of water-main, a population of 163,015, and a consumption of 30,873,333 gallons a day at the time of the first measurement has been measured. This consumption was reduced through Pitometer work by 6,499,280 gallons, equivalent to a saving of 21 per cent, approximately one-half of this amount being leakage inside of the curb stop and due to the negligence of the consumer. This water if sold would net a yearly return of \$218,937.60.

The length of time spent in a section varies according to the character and extent of the area being surveyed and is also dependent upon the physical condition of the distribution system; that is, whether or not extensive repairs are required. In the past year the cost of surveying a section has averaged approximately \$1,000, being about \$168 per mile of water-main, but by better coordination of the various factors entering into the work, the cost is being slightly decreased.

Water-Waste Surveys Are Enlightening

By Arthur T. Clark

Superintendent of Water-Works, Herkimer, N. Y.

WE have had a water-waste survey made of the distribution system of the Herkimer water-works and believe that the results obtained were worth many times the cost of the survey. The important results of such a survey cannot help but be enlightening, and even though no glaring defects are located in the distribution systems, the value of the survey continues to manifest itself in the operation of the system for years afterwards.

The survey cost the city of Herkimer \$1,250, which could not have been better invested in increasing the operating knowledge of the water-works. The pumps were tested at varied rates of speed, giving the

corresponding capacity and the percentage of slip from the rated capacity. The distribution system was divided into sections, and permanent Pitometer manholes were constructed, so that the variations in draft requirements could be determined. The total leakage and the location of all large leaks were determined, and all defective valves and hydrants, which otherwise would have been undetected, were definitely located. We found that the survey gave us a daily per capita consumption exclusive of industrial use and leaks, which, once accurately determined, gave reliable figures for future calculations of consumption, and a yardstick for gauging water waste.

Running Down Losses in Ogdensburg, N. Y.

By Charles H. Lord

Superintendent of Water-Works, Ogdensburg, N. Y.

IN conducting the water-waste survey of the water distribution system in Ogdensburg, N. Y., the system was divided into five districts, not including the 14-inch line to the State Hospital, and a measurement of the consumption in each district was made for a period of 24 hours. The total average daily consumption and minimum night rate obtained from the district measurements was as follows:

| | |
|----------------------------------|--------------------------------|
| Average daily consumption | 3,070,000 gallons per 24 hours |
| Minimum night rate | 2,407,000 gallons per 24 hours |
| Per cent night to day rate | 78.5 per cent |

This percentage of 78.5 is high and indicates a large percentage of waste. Subtracting the State Hospital rates from this, we have the following in the remainder of the system:

| | |
|----------------------------------|--------------------------------|
| Average daily consumption | 2,564,000 gallons per 24 hours |
| Minimum night rate | 2,050,000 gallons per 24 hours |
| Per cent night to day rate | 80 per cent |

Of the minimum night rate of 2,050,000 gallons per 24 hours, 1,907,000 was accounted for by subdivision, leaving a discrepancy of 143,000 gallons per 24 hours,

which is partly due to a change of consumption between the time of district measurement and subdivision and partly to a reduction of pressure caused by operating values. The 1,907,000 gallons per 24 hours was found by the survey to be distributed as follows:

| | Gallons per 24 Hours |
|------------------------------------|-------------------------|
| Underground leaks | 346,000 |
| Submerged leaks | 66,000 |
| Metered commercial use | 289,000 |
| Unmetered commercial use | 168,000 |
| Free water | 133,000 |
| House waste, inspected | 349,000 |
| House waste, to be inspected | 150,000 |
| Small scattered rates | 356,000 |
| | <hr/> 1,907,000 |

A total underground leakage of 346,000 gallons per day was found, caused by two joint leaks, one cracked main, and twenty-three service leaks, and in most cases no sign of the leak could be seen from the surface of the ground. All but a few of the small service leaks have been located, dug up and repaired, and the rest are being attended to. A leak of 66,000 gallons per day was located in the 8-inch line under the Oswegatchie River at Spring Street. A

diver was sent down and found it to be caused by a crack in the pipe near the place that had been previously repaired. This leak was being repaired at the time of the completion of the survey. House waste amounting to 349,000 gallons per day had been inspected at the time of the completion of the survey and was found to be caused by 171 fixture leaks.

A total avoidable waste of 761,000 gallons a day due to underground leaks, one submerged leak, and house waste was discovered in the distribution system by the survey. Of this, 411,000 gallons was caused by underground and submerged leaks and has been permanently stopped by locating and repairing the leaks. The house waste, amounting to 349,000 gallons a day, presents a more difficult problem. This can be temporarily stopped by house-to-house inspection, but cannot be kept at a minimum unless inspections are made very frequently. It is best combated by a program of selective metering, putting meters on those places that have been found wasting the most water.

The unmetered commercial use of 168,000 gallons a day has been a loss to the water-works and probably does not repre-

sent the total loss due to this cause, as it is very likely that the increased day use above this amount is more than the places concerned have been paying for.

At the beginning of the survey the total minimum night rate of the entire system was 2,460,000 gallons per 24 hours, which included 250,000 gallons going to the paper mill. Just before the survey was completed, after the two joint leaks, the cracked main, a large service and a few small service leaks had been repaired, the total minimum night rate was 1,780,000 gallons per 24 hours with the paper mill shut off. This reduction of 680,000 gallons per 24 hours less 250,000 gallons, leaves 430,000 gallons per 24 hours, which represents the saving caused by the survey up to that time. The submerged leak and most of the small service and fixture leaks had not been repaired at that time. About 275,000 gallons per 24 hours in underground leaks had been repaired, two fountains amounting to 22,000 gallons had been shut off, probably 50,000 gallons in house waste had been stopped, and the rest was due to a reduction in commercial use where meters had just been installed. The water-waste survey has thus been of great value to this department.

Breaking of Frozen Idle Mains Caused Large Loss

By H. M. Beardsley

General Manager, Elmira Water Board, Elmira, N. Y.

THE records of the water department of Elmira, N. Y., some time ago showed discrepancies between output and consumption indicating either that there was considerable leakage or that some of the large industrial meters were not registering properly. The water-waste survey which was instituted included 48-hour measurements of the total consumption of the city and the amount of water pumped from the river to the filtration plant. A map of the distribution system was then made and the city divided into eight districts. The boundaries of each district were indicated on the map, and the gaging point for the installation of the Pitometer was set up in each district. The tests of the individual districts were very interesting and brought to light much that was unexpected.

Two Large Leaks Discovered

One leak was discovered in Woodlawn Cemetery, where the water is shut off every winter. Apparently some water had remained in the lines and had frozen and burst the pipes. Owing to the gravelly nature of the soil, the water did not come to the surface and was being lost at the rate of nearly 100,000 gallons per day.

A second large leak was discovered at the corner of Water and Hoffman Streets, where a part of the lead had blown out of the joints in a 20-inch distributing line. As the joint happened to be in a sewer man-hole, water was running away without coming to the surface. The loss here also amounted to at least 100,000 gallons per day.

A number of smaller leaks were discovered, ranging from 10,000 to 25,000 gal-

lons per day, and the value of the water lost through all of the leaks discovered and now being saved through repairs in the mains and services in one year amounted to enough to pay the cost of the survey, twice over.

A test was made of the Venturi meter from the 30-inch supply line by establishing a gaging point near the filter plant. This test was most satisfactory, as it confirmed our own tests made frequently by a manometer as to the accuracy of the Venturi meter and the records and statistics made up from its measurements.

As pumping mains are subjected to more or less hard usage because of the varying and sometimes unusually high pressures they are subjected to, a special test was made of the 24-inch lines in Hoffman

Street, which supply the filter plant with water. The results of the test showed that the force main was in excellent condition as regards leakage.

In addition to testing the mains for leaks, all 4-, 6- and 8-inch meters were tested in place. These meters generally were found to be in excellent condition, but one of them was found to be 20 per cent slow, and the added revenue from this consumer for one year helped materially in paying the bill for the test.

We are thoroughly satisfied with the result of the leakage survey and found it most profitable in every way. Our output is now mounting up again and we are seriously considering checking up some of our lines, valves and meters by another water-waste survey.

Unmetered Fire Lines a Source of Loss in Oswego, N. Y.

By William A. McCaffrey

Superintendent of Water-Works, Oswego, N. Y.

DURING 1920, the city of Oswego made an extensive survey of its water distribution system for water waste and found that approximately 1,000,000 gallons per day was being lost through unmetered fire lines. These lines were leaking under concrete floors in buildings, and the water was seeping away into the sewers. One line had been leaking for five

years at the rate of 134,000 gallons per day. The owner of the plant stated that he thought the water was coming from a spring.

A leak of 750,000 gallons in a 20-inch main running under the river and several leaks of from 60,000 to 100,000 gallons in various parts of the system were discovered and repaired.

Water-Waste Survey Helps Richmond City Water-Works

By H. A. Dill

Superintendent of Water-Works, Richmond, Ind.

THE water-waste survey made of the distribution system of the Richmond City water-works in 1920 located one cracked 6-inch main, 3 open service pipes, 10 service leaks and 8 hydrant leaks, totaling a loss of 268,000 gallons in 24 hours. The leaks through house waste were shown to be 365,500 gallons in 24 hours, of which 60 per cent were metered. In addition, the survey showed leakage amounting to 157,000 gallons, too small to be divided into blocks with the Pitometer.

The leakage of the 6-inch main mentioned above amounted to 140,000 gallons a day. It was located 5 feet underground and wasted into a near-by sewer with no indica-

tion of the leak on the surface. Seven fire lines were tested and found to be in good condition.

In carrying on the survey a large number of valves had to be operated, most of which were in good condition; others showed need of stem packing, so that the survey was also quite valuable in this respect.

The estimated saving due to stopping underground leaks, figured at 2½ cents per 1,000 gallons, would amount to about \$2,500 a year. This in one year offsets the cost of the survey, which is considered to have been a very profitable expense to the water department.

A Combined Deep-Well and Surface Water-Supply

Deep-Well Water Restores Alkalinity in Treated Water
and Furnishes Entire Supply in Emergency

By George P. Womble

Superintendent, Municipal Electric and Water Department, Washington, N. C.

WHEN the new filtration plant was put into service at Washington, N. C., it was soon found that owing to the amount of alum required to get the proper coagulation, it was necessary to use a very large quantity of soda-ash. This, besides being very expensive, proved difficult to regulate properly.

After going into the problem thoroughly, it was decided to drive a test well on our property to ascertain the advisability of using deep-well water for securing the desired alkalinity. Upon completion of the well, tests showed the alkalinity of the water to run about 300 parts per million, which was very satisfactory. The test well was driven to a depth of 60 feet, and a sufficient quantity of water was obtained.

It was decided to sink five 3-inch wells to furnish an ample supply. These wells were spaced over a rectangular area of about 200 square feet. The casings were all brought to one header and carried to the pump, which is of the triplex pattern, with a capacity of 300 gallons per minute. This was formerly used in our old water plant for pumping from wells, and has proved highly satisfactory in its new location.

The capacity of the filtration plant is one million gallons per day. At present there is a consumption of about 450,000 gallons per day. The alkalinity of the raw water varies from 4 to 5 p. m. Previous to the employment of deep-well water for correcting the deficient alkalinity, alum was used at the rate of 500 pounds per million gallons, and soda ash at the rate of 300 pounds per million gallons. We now use about 300 pounds of alum and no soda ash.

The ideal arrangement for using well water for the correction of deficient alkalinity is to place a meter in the discharge line between the pump and the mixing chamber, and by metering the raw water-supply the alkalinity can be regulated to a nicety. The

amount of well water used is regulated by a gate-valve placed in the suction line to the pump, and is varied in accordance with the results of tests of the filtered water.

It is not the intention of the writer to go into the subject of costs covering the installation of the deep well machinery, or the savings realized by the use of well water for acidity correction, as each case must be worked out according to local conditions and will vary according to nature of soil, freight rates, labor costs, etc. It has been our experience, however, that this method of treatment is far more satisfactory than the soda-ash or other treatments, and the savings have reached as much as \$5 per day, varying, of course, with the price of soda-ash and the quantities used.

The original layout was enlarged a year ago by adding two more wells of the same size, connected to the original suction header. This enlargement was not made on account of a lack of water for correction of deficient alkalinity, but to increase our supply to the point where we could depend upon the wells as an auxiliary to the regular supply in event of the failure of the filtration plant or other cause. We were fully justified in making this additional enlargement by the conditions which presented themselves in less than sixty days after the completion of the work. Being situated on the coast, our water-supply is apt to become brackish upon a continuance of winds from the southeast which carry the tide into the creek from which we obtain our supply. During the period referred to, the prevailing winds from the southeast lasted for about sixty days and caused the surface supply to become very salty, whereupon the well pump was brought into play and furnished our total supply during the whole period.

ACKNOWLEDGMENT.—From a paper presented at the annual meeting of the North Carolina Section of the American Water Works Association.

Milwaukee's New Meter-Repair Shop

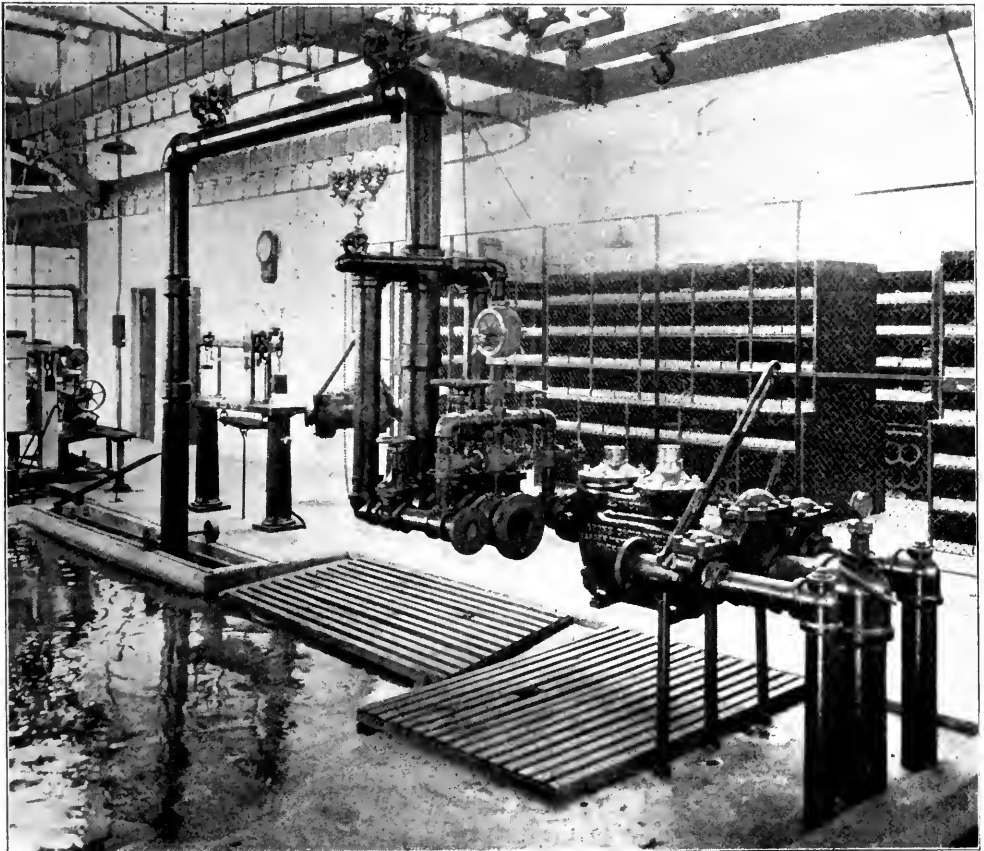
By Frank J. Murphy

Superintendent, Division of Meters, Milwaukee Water-Works

A PARTICULARLY substantial and well-equipped shop building for the maintenance of the city's meter system has recently been erected for the Division of Meters of the Milwaukee Water-Works. This new acquisition represents an investment of \$75,956 for grounds, building, furnishing, and fees for architects and inspectors. The new shop is within one and one-half blocks of the City Hall, and though in a congested business district, its design affords light and ventilation generally obtainable only in less congested districts.

The site selected has an east frontage of 60 feet, with a depth of 120 feet to a paved alley. The building dimensions are 50 by 108 feet with an ell extension at the rear, of 22 by 12 feet. As the building is erected on the north part of the lot, this provides a 10-foot space to the south, and a trucking space at the rear of the building.

The building, a high one-storied and basement building, is of fire-proof construction throughout. The foundation is of concrete and of the "floating" type. The upper structure is steel, with steel roof trusses supporting a roof of long-span



TESTING-BENCH IN MILWAUKEE METER-TESTING LABORATORY

Note stock-room behind wire partitions, also discharge pipes going through slot in floor, and monorail trolley system overhead

Pyrobar type. Acme lime brick curtain walls enclose the steel framework on the sides and rear. The front is red brick with Bedford stone trimmings.

Essential requisites of a meter repair shop are an adequate water-supply and an amply sized sewer system. Milwaukee officials, in designing this shop, provided these requisites in the installation of a 6-inch water-main delivering water under 55 pounds pressure, and the installation of a double line of sewers. One sewer system drains to the public sewer in the alley and serves the plumbing fixtures and the greater portion of the roof drainage. The other sewer, emptying into the public sewer of the street, serves two downspouts and the meter test water discharge. Under this plan no interruption of testing work, or flooding of floors, occurs as a result of emptying a large volume of water from the test tank into a sewer greatly taxed by roof water discharge.

A Well-equipped Stock-Room

At the front is the "surplus stock room," 18 by 46 feet in size. Here, in bins and racks, is the stock of meter parts and materials to replenish the stock-bins of the shop floor stock-room, as well as pipe, fittings, oil, waste, and other materials and supplies of a bulky or heavy nature or for infrequent use. A sidewalk chute facilitates freight deliveries. Three large bins with chute openings from the upper stock-room floor, and with doors opening to the outer basement, serve as receptacles for storage of scrap brass, iron and bronze borings. A stairway leading from the upper stock-room is the only means of entry; the doors from the basement stock-room to the general basement, as well as the scrap material bin doors, are locked and controlled solely by the stock clerk.

Opposite this stock-room is a space 16 feet by 16 feet for an experimental test room. It is the intention to fit this room for experimental tests.

Occupying a space in the central part of the basement is a 10-ton Howe scale with its beam extended to the floor above. Upon this scale has been built a steel tank of 285-cubic-foot capacity, with drain to the sewer. The tank and scales are used for the test of large meters.

Bins and shelving for nipples and meters,

a pipe fitter's bench with vise, a leather washer cutter, ample floor space for general storage, and the heating plant, complete the list of basement equipment and use. At the rear an electric freight elevator of 8,000 pounds capacity equipped with automatic guard gates and a self-stopping device, facilitates the movement of freight between the first floor and the basement, and a stairway adjoining affords additional means of access. Below the driveway on the south, and opening to the basement, is a large storage space for coal and ash.

The first floor, a high-storied room measuring 20 feet from floor to roof, contains the repair shop, stock-room, wash and locker room, toilet-room, machine shop, testing rack and shop foreman's office. On the right, extending from the front wall, is the stock-room, 18 by 46 feet, divided from the shop proper by a woven iron wire partition 9 feet in height.

Along the outer wall and in conveniently arranged floor sections with ample aisles, are adjustable steel bins for meter stock, materials and tools. The bins are 7 feet high and have 1,129 compartments. This and the basement stock-room are under the sole supervision of a stock clerk.

The wash and locker room, 14 by 18 feet, has wash sinks with hot and cold water-supply and 22 individual steel lockers. The toilet-room is provided with plumbing fixtures of the most modern design. Between the toilet-room and the machine shop at the rear is a space 18 by 18 feet along the walls of which is a double-tier table, 15 feet long and 3 feet wide, for incoming defective meters, and against the other two walls are 154 bins for Worthington piston meters awaiting machining. These bins and tables, like those of the stock-room, are of adjustable steel construction. The center of this space is utilized by the employees for lunch, a large table having been provided.

The machine shop, 20 by 30 feet in size and occupying the ell of the building, has light from windows on two sides, additional to that from the skylight extending over the bin space. Here, with the equipment of a modern machine shop, is performed the machine work of the division as well as considerable work for other divisions of the water-works.

This machine shop equipment comprises a 24-inch shaper, a 14-inch by 6-foot



REPAIR BENCHES AND SMALL TESTING MACHINES, MILWAUKEE METER-TESTING LABORATORY

Prentice lathe, a 16-inch by 8-foot Rahn and Larmon lathe, a Williams number 2 pipe machine, a Milwaukee drill press, a wet tool grinder, a blacksmith's forge with blower, an anvil and blacksmithing tools. An I-beam trolley of one-ton capacity extends over the shaper and the two lathes for handling heavy work on these machines. Each piece of machinery has its individual electric motor.

In the center rear section are the four Worthington piston meter repair benches, with an 11-inch by 5-foot Blount spud lathe, individual motor drive, and an old foot-power lathe, a relic of the early days of the division. Along the wall is a double-tier adjustable steel table 15 feet 6 inches by 3 feet 3 inches, for meters to be repaired.

Following, and along the south wall, with splendid window light, is a 1 $\frac{3}{4}$ -inch maple-top work-bench 58 feet long and 2 feet 6 inches wide. Division strips 3 inches high divide the bench into 15 sections. Each section is provided with tool racks at back and a drawer below. Bench vises and removable pounding blocks placed alter-

nately at the dividing strips afford each man the use of a vise and block. Two gas automatic soldering iron heaters, one at the end and the other at the center of the line, are used in making dial repairs.

A Time-Saver

An equipment that has elicited considerable favorable comment is a wire line parcel carrier system between the meter repair bench, just referred to, and the stock-room. The installation of this system, which is a modification of a department store parcel carrier, has been productive of splendid results as a time-saver.

Seven "stations," or carrier basket drops, have been placed along the bench line, each station serving two men, with a like number of "stations" at the stock clerk's desk. As meter repair parts are required, the bench man places his shop order and the defective part in the carrier basket, and, releasing the basket catch by a slight pull of the rope, "shoots" the basket to the stock-room station. The order having been filled and entered on the shop order and the daily record of materials used, the basket is re-

turned to the bench man, who in the meantime has been preparing the meter for the part instead of wasting time traveling to and from the stock-room for the part.

It is a rule of the division that all defective parts must accompany an order for a new part. This not only prevents errors in filling the order, but also assures a complete control of scrap material. On receipt of the defective parts, the material is dropped through the stock-room floor chute to the proper bin in the basement. At the end of the year the scrap is sold.

The shop foreman's office, 11 by 16 feet, is at the front and to the left of the entry hall, and is partitioned from the shop by a fire tile plastered wall. The shop-side partition is plentifully supplied with windows. From the shop office a full view of the shop can be had. File cases carrying an active five-year file of detail repair for each meter are kept here. The shop office and the city hall office of the division are connected by a private and public phone.

The Testing Apparatus

In the center of the shop is the test "rack" or floor. This is a space 33 feet long and 11 feet wide surrounded by a curb wall 6 inches high and 24 inches wide. The floor within these curb walls is pitched to the center to a 4-inch drain leading to a catch-basin in the basement.

On the 24-inch curb wall and across the aisles from the work-benches, are placed six Mueller test tables with Mueller multiple orifice valves, quick-opening supply valves and necessary adapters for testing meters from $\frac{5}{8}$ to 2 inches. Each test table has a 2-inch water-supply and discharges to a 15-cubic foot galvanized iron tank on a scale within the enclosure. The tanks discharge on the floor to the center drain. A sink at each end of the test floor, adjacent to the work-benches, and a hose connection near the Worthington piston meter bench, provide facilities for cleansing meters and for general shop use. Each sink has hot and cold water and bubbler supply.

On the test floor side opposite that occupied by the "small" or Mueller test tables, is the large meter-testing apparatus. This tester was designed and built by the Division of Meters. Of 6-inch pipe construction, the tester is arranged for testing 3-, 4- and 6-inch meters from the full-stream

flow to the 1/16-inch and 1/32-inch streams, and is adjustable to a "spread" from 9 to 102 inches. Three inlets, of 3-, 4- and 6-inch sizes respectively, are controlled by quick-closing lever handle valves and provided with flanges for connection of the meter to be tested.

The outlet end is provided with the same number and sizes of flanged openings with wheel gate-valves for discharge control. Between each flange and each valve a 2-inch pipe, separately valved, is cross-connected to a Mueller multiple orifice valve, the outlet end of which connects to the rising discharge pipe of the tester. The 3- and 4-inch outlet pipes are similarly connected to the same rising discharge. This 6-inch discharge has a rise of 6 feet to a trolley hanger, a horizontal length of 8½ feet, and then drops through a slotted opening, 9 feet in length, in the curb wall to the 285-cubic-foot tank in the basement.

The steel test tank discharge is controlled by a heavy brass drop valve connected to a foot-operated lever with locking device, on the curb wall. A slight foot pressure on the lever raises the valve, and by moving the lever arm sideways slightly, locks "open" in a lever bracket, thus holding the valve open without further attention. The weighing of the tank water is facilitated by the scale beam extended from the 10-ton Howe scale in the basement to the test floor.

A reference was made to the trolley supporting the outlet side of the tester. This is a continuation of a "Lauden trolley" extending from the loading platform to the test floor with safety locking switches, to the larger of the Mueller test tables and to the large meter tester. The trolley track is attached to a 9-inch channel iron beam hung from the trusses, and capable of carrying a load of 2,500 pounds. It is equipped with one 1-ton and one ½-ton trolley for shop use, and two ¼-ton trolleys for the tester outlet. By means of this trolley the tester can be moved with ease to accommodate meters with variation in spread from 9 to 102 inches.

The Crime of Water Waste

Read the crime prevention article, "The Value of Water-Waste Surveys," on pages 465 to 471.

The Mapping of Old Sewers

Procedure Followed by the City Engineer's Office, Hartford, Conn.

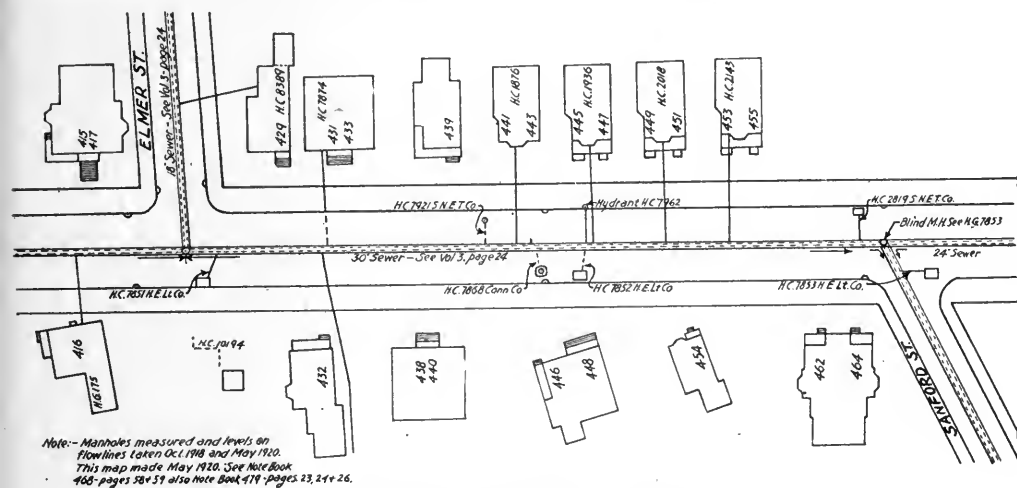
By Willard S. Brewer

Division Engineer in Charge of Sewers, Hartford, Conn.

THE records and plans which were made of some of the early sewers of Hartford at the time they were built and which have come down to us, are quite meager. In 1844, when the first sewer of which we have record was built, and for some time thereafter, a written layout was the only description of the system. As many of the points to which the sewer was referenced have long since disappeared, the location of the sewer itself is known only approximately. Of the sewers built in the

by that much the amount unmapped. In particular, the reconstruction of the sewers in the older business part of the city, near the Connecticut River, as a part of a scheme to relieve this section from flooding by spring freshets in the river, was carried out between 1911 and 1914 and replaced over two miles of these, the oldest sewers in the city. In 1918, out of a total sewer mileage of 150, there were nearly 30 miles with either no maps or very poor maps.

With the regular construction work in



A SECTION OF THE NEW SEWER MAP OF HARTFORD, CONN.

'50's and '60's we have profiles of a large portion—presumably made at the time of construction, although there is no date on them to attest this. There is a bound book of mounted maps, and the earliest date showing is 1873. From their appearance it is evident that these plans were made primarily for purposes of assessing the cost of the sewers, as most are on a scale of 100 feet to 1 inch and have few figures which would give even a fair location of the sewer.

Previous to 1918 very little work had been done towards providing maps of these old sewers, although of course the occasional reconstruction of a sewer cut down

progress, and with the men and money available, it had been possible only to keep up with current work in the matter of mapping. However, with the slowing up of large construction work in 1918, it was possible to turn our attention to this neglected part of the work of a city engineer's office, and during the intervening four years about 16 miles have been mapped. The result, of course, is in many cases only an approximate location of the sewer, but it represents all the information it has been possible to obtain. Nearly all of the office work and some of the field work have been done in the winter, but advantage has been taken of any time available in the open

season to do all field work possible. It was decided also to locate all catch-basins at the same time that the sewer manholes were located.

Field Work Procedure

The procedure in the field work has generally been as follows: First, in the office, from such maps and profiles as are available, make a sketch or notation in the field book, giving approximate location of sewer and where manholes are to be found. Oftentimes it was unnecessary to do this, as the chief of party would know of the location of the sewer and of existing manholes. Once on the ground, however, it was the duty of one man, and sometimes two, to walk through the street in order that no manholes should be missed. At intersecting streets, manholes and catch-basins were referenced either to curbs or to the city highway bounds. At the centers of blocks they were quite generally located from curbs transversely, and longitudinally from the faces of houses extended. Levels were taken on the tops of the manhole castings, and the depth of the flow line and the crown of all inlets and outlets were determined. The difference between the flow line depth and the crown depth of course gave the height of the sewer. Most of the old manholes have no ladder, and quite a large proportion are too small for a man to descend. In these cases it was possible to measure the width of the oval and egg-shaped sewers by fastening an ordinary collapsible rule to a level rod and lowering it down the sewer reading it by the help of sunlight reflected down the manhole by a mirror. Where possible, a man descended the manholes, both for the purpose of measuring the sewer and of inspecting the condition of the sewer by the use of sunlight reflected by mirrors.

Office Work

In the office the first thing done was to obtain a street plan, that is, a plan showing street lines, curbs, property lines and houses. This was obtained from our street plans on file in the office, which in most cases are on mounted drawing paper, to a scale of 1 inch to 40 feet. Our standard record sewer plan for all new construction is a mounted sheet 20 by 30 inches, containing both plan and profile. At first the old sewers were mapped on these sheets, but

later tracing linen was used, as the street plan could be obtained by tracing directly instead of by transferring by the use of a paper tracing, carboned, resulting in very much less work. A profile of the street surface obtained from our office profile is then put on this sheet. The results of the field work are then plotted on plan and profile.

Next, our record of the house connections which have been built at various times from the sewer to the houses is gone through and the locations of the house connection and of the main sewer are plotted; depths are also put on the profile. As this, in many cases, is our greatest source of information, a word of explanation concerning the method of laying and recording house connections may be of value.

Beginning in 1903, all connections to the sewers have been laid by so-called "licensed drain layers," who are private contractors licensed by the city to do this work and are under bond to the city. The drain layer takes out a permit for each job he undertakes, and notifies this office when he is ready to lay pipe, whereupon an inspector goes out, inspects the drain and gets the location of it. If the main sewer is an old one of which we have no location or only a poor location, it is located also, and a depth is taken from the street surface. All this information is plotted on the back of the permit stub, and an index card is made out and placed in the house connection index under the street name. Thus, when mapping these old sewers, by referring to the house connection index we not only are able to plot the house connections made since 1903, but obtain considerable information concerning the main sewer.

The next step is to compare this plan as made up from actual measurements on main sewer and house connections with such written layouts, plans and profiles as may be on file in the office. This latter material as a general rule does not help very much as far as location goes, but it is of great help in determining the correct grade, and sometimes is the only data available for hundreds or thousands of feet. For instance, in Asylum Avenue, one of the older residential streets, there is a brick sewer built in 1865 with not a manhole showing for a distance of 2,700 feet. There was no plan of the sewer, and as nearly all the houses were quite old, it was possible

to obtain only an approximate location. But a profile (presumably made at the time the sewer was built) was in existence, and this was used in making up the profile of the sewer on the new map. The results of actual levels at manholes at times agree with the written layout or old profile, and at other times do not agree, but it is apparent that any discrepancies are due to inaccuracies in bench mark elevations.

Last winter a rather novel method was used to locate an outlet sewer 20 inches in diameter which ran across about a mile of meadow and marsh land at depths of from 1 to 8 feet below the surface. This sewer discharges into the Connecticut River and at times of freshet in the river the meadow is entirely under water. The sewer was therefore built of cast iron pipe and is without manholes for the entire length. There was a plan and profile in the office. The plan, scale 100 feet to 1 inch, showed the line of the sewer, which consisted of two tangents connected by a curve 800 feet long of a radius of 1,739 feet, also property lines and several brooks. As there is very little on the ground to show where the property lines are, it would have been a difficult task to locate this sewer if the occasion had arisen, and it was therefore decided to go out on the ground and find the sewer by means of augur borings. The augur used was an ordinary 1½-inch wood augur with the shank welded to a piece of iron, which in turn was threaded into a 5-foot piece of ⅞-inch galvanized iron pipe,

with a cross-piece at the end to turn with. Short pieces of pipe can be added so as to increase the length for use in deeper cuts.

The location of the sewer at the city end of the meadow was shown by a manhole. A scaled location from a boundary stone and another from a small bridge across one of the brooks gave a trial location for a point about 1,000 feet out in the meadow, this point being selected because the sewer was only 3 feet deep. Borings were begun at this latter point and continued at intervals of about 18 inches on a line normal to the sewer. The augur could be worked through the clay and river silt of this meadow land very quickly, and in the course of about two hours after making several holes the sewer was found. Several intermediate points were tried and the sewer was easily located. By prolonging the line thus obtained out across the meadow, the augur could be spotted very close to the correct location. When the curve was reached, allowance was of course made for the amount of deflection. The sewer was located in this manner at intervals of from 200 to 300 feet all the way to the river, and levels were taken at each point. It was referenced at several places to the city line boundary stones, and in addition five wooden posts were set to act as markers, the lower ends being anchored to prevent their being floated when the river is at freshet level. All this information is shown on a 100-scale tracing, so that the sewer can be staked quickly whenever needed.



MOTOR TRAILERS MAKE QUICK TRANSPORTATION AN EASY MATTER

What Is the Proper Term for Water-Works Bonds?

By Charles W. Sherman

Metcalf & Eddy, Consulting Engineers, Boston, Mass.

THE reasonable period or term of a bond is intimately connected with the life of the property covered by the bond. It is also related to the depreciation or loss in value of the property. The two items of term and amount of bonds cannot be separated in a discussion of the proper or reasonable length of term of bonds.

It is self-evident that bonds on a water-works property, like a mortgage on residence property, should be amply secured; that is, the bondholder should know that the value of the property is sufficient at all times to cover the loan and to repay it at maturity.

Life of a Water-Works Plant

If a water-works plant were like the "One Hoss Shay," which, at the end of its life, went to pieces,

"All at once and nothing first,
Just as bubbles do when they burst,"

and could be depended upon to render service until that time, bonds might be issued against it for the term of its life, but with provision for a sinking fund to repay the loan at maturity, since the property would then have only a junk value. or, what is similar in many ways, with serial maturity of bonds for repayment of principal.

But a water-works is a complex plant, made up of many items having widely different expectancies of life; and in growing towns it is continually being added to, so that the distribution system, for instance, consists of many parts varying in age from less than one year to the age of the oldest parts of the plant. In this country we have instances of cast iron pipe 75 years old and still in service; but the average age of the distribution system containing these pipes is likely to be less than 20 years, because so large a proportion of the system has been added in recent years.

In a paper* by Metcalf, Kuichling and Hawley, presented to the American Water Works Association in 1911, they gave the percentages of the total values of a large number of water-works plants, represented by the principal parts of such works. Averaging the figures presented, I find that the value of the "typical" water-works, based upon these particular statistics, is divided as follows:

| | Per Cent |
|-------------------------------|----------|
| Land and water rights..... | 6 |
| Water-supply works | 9 |
| Pumping works | 17 |
| Distribution reservoirs | 6 |
| Purification works | 11 |
| Distribution pipe system..... | 51 |
| | 100 |

The useful life of these several parts, from the point of view here under discussion, may be taken approximately as:

| |
|--|
| 150 years for land and water rights |
| 75 years for water-supply works |
| 30 years for pumping works |
| 40 years for distributing reservoirs (including stand-pipes) |
| 25 years for purification works |
| 50 years for distribution system (including services and meters) |

Then the average life of the entire system will be 51½ years, or, in round numbers, 50 years. The United States Census Bureau "Uniform Accounts for Systems of Water Supply" (1911) states: "Until further study and experience or a series of inspections and appraisals at fixed intervals furnish more accurate data, the average life of the various parts of the fixed properties of a water-supply enterprise may be assumed to be approximately as follows: for horses, carriages, automobiles, and laboratory apparatus and appliances, 10 years; water meters, service pipes, office furniture and general operating equipment, 15 years; boilers, steam pipes, and filtration equipment, 20 years; engines, pumping machinery, and wood pipes, 25 years; masonry of filtration plant, cribs, iron water pipes, intakes and connections, fire hydrants, stand-pipes, and buildings, 50 years; reservoirs,

* "Some Fundamental Considerations in the Determination of a Reasonable Return for Public Fire Hydrant Service," by Leonard Metcalf, Emil Kuichling and William C. Hawley.—Proceedings American Water Works Association, 1911, p. 55.

tunnels, and aqueducts, 100 years; and for the water-supply system as a whole, 50 years. All these approximations are subject to modification by reason of any unusual conditions which may shorten or prolong the life estimated above."

The Committee on Depreciation, of the American Water Works Association, in its final report**, suggests:

| | |
|---|-----------------|
| For storage reservoirs, dams, and large aqueducts | 75 to 150 years |
| For cast iron pipe of large diameter..... | 75 to 125 years |
| For cast iron distribution pipe..... | 30 to 90 years |
| For wrought iron distribution pipe..... | 25 to 40 years |
| For services | 15 to 80 years |
| For distributing reservoirs | 50 to 75 years |
| For stand-pipes | 30 to 60 years |
| For meters | 20 to 30 years |
| For pumping machinery | 15 to 60 years |
| For boilers | 15 to 30 years |
| For filter plants | 15 to 50 years |
| For buildings | 20 to 60 years |

The average figure of 50 years' life for a "typical" water-works plant is of no direct use, since it presupposes that all items of the plant are new at the same time, and that no renewals are necessary. Starting with an entirely new plant, of the "typical" character assumed, it does represent the average expectancy of life; if no extensions are required after 5 years, the remaining life will be 45 years, but if extensions have been required, the average remaining life may be 46 years or more. The remaining life of the plant does not decrease uniformly from 50 years to 0, since the effect of extensions and replacements which add new elements to the plant at frequent intervals is to reduce progressively the rate at which the remaining life decreases. Indeed, after a time the remaining expectancy of life no longer decreases, but remains substantially constant.

Average Remaining Life Is Proper Term for Bonds

The average expectancy of life remaining after it no longer decreases is then a suitable term for which bonds may be issued in the case of the assumed typical plant. This remaining life of the plant will be the same now, next year, and five years from now. This statement is not precise in its application to any particular works, but is nearly so with any growing plant, or even in one whose growth has ceased, provided that replacements and renewals are made as they become necessary. That is

to say, the effect of the long life ahead of new plant added for renewals and extensions will, on the average, offset the lesser remaining life of the old plant due to increasing age. In practise, the expectancy of future life generally decreases gradually during a term of years, while only minor extensions and renewals are made, and then increases abruptly when important additions to plant are made; the average result corresponding to a relatively uniform expectancy of life.

Determination of Remaining Life

The average remaining life expected is rarely estimated or stated in reports of valuations. The amount of the accrued depreciation upon existing plant is, however, practically always stated, and its ratio to the reproduction cost (or original cost) of existing plant is easily obtained. The relation between accrued depreciation and elapsed proportion of the total life is a direct one; and if the average total life can be taken as a constant, say 50 years, the remaining life follows directly.

For this estimation the total accrued depreciation, including that on abandoned structures, should be used, and compared with the total cost, including that of the same abandoned structures. The figures should be based upon complete records for works of a considerable age, not less than 20 years; figures for works of which the record of abandoned structures is lacking or incomplete are less satisfactory and require some adjustment before being used.

A sufficient number of complete records, covering both large and small works, automatically includes the normal percentage of complete depreciation, due to accident, obsolescence, or other causes resulting in less than the usual life for some structures, and the figures obtained from these records furnish a basis for approximate adjustment of data covering only the depreciation of existing plant.

In a paper entitled "Practical Checks upon Water Works Depreciation Estimates,"* Leonard Metcalf has submitted a table of "Depreciation Records of Some Old Water Works," which contains 11 such complete records; and other data not included in the published paper bring the

**Journal American Water Works Association, 1919, p. 85.

*Journal American Water Works Association, 1919, p. 371.

number to 13. The total accrued depreciation in these 13 cases averages 19.7 per cent, the range being from 7.2 to 27.0 per cent. Omitting the lowest record as abnormal, in view of its divergence from the others, as well as the known circumstances making for a low depreciation, the range is from 13.3 to 27.0 per cent, and the average 20.7 per cent.

Assuming that depreciation accrues on the basis of a geometrical progression, corresponding to the growth of a sinking fund earning 4 per cent interest, a total accrued depreciation of 20.7 per cent on a plant of 50 years' total life, corresponds to an age of 20 years, and a remaining life of 30 years.* The range of depreciation from 13.3 to 27.0 per cent corresponds to remaining life of 36 to 26 years.

On the basis of these figures, the conclusion is obvious that under normal circumstances the fair term for water-works bonds is 30 years, and that in individual cases it should seldom be less than 25 or more than 35 years.

Residual Value

These same figures of accrued depreciation indicate that there is still remaining in normal works a value of approximately 80 per cent of their cost, the range being from 73 to 87 per cent. The figures given have been based upon reproduction rather than original, or actual, cost, but the proportions would differ but slightly, if at all, if figures of actual cost had been used.

In references to cost or value in this paper the physical plant, only, is meant. Items of value not represented by the plant are omitted from consideration as having no bearing upon life of the property, or upon the part of the value which may properly be covered by bonds.

*NOTE.—If the average total life were 60 years, the remaining life corresponding to 20 per cent depreciation would be 33 years; and for a 70-year total life, the remaining life would be 35 years.

An examination of the records of accrued depreciation for a large number of other water-works, mainly those for which there is no record of abandoned property, indicates that the above figures are conservative. After adding reasonable allowance for the effect of abandoned property, there seems to be a decided majority of plants in which the accrued depreciation is less than 20 per cent, and but few in which this figure is materially exceeded.

Reasonable Term for, and Amount of, Water-Works Bonds

It therefore appears that the fair or reasonable term for water-works bonds is 30 years, and that 80 per cent of the cost may be covered by bonds, which will be suitably secured by the property covered.* Under exceptional circumstances the term may be reduced to 25 years, and the percentage of cost to be covered by bonds to 75.

In the case of bonds of municipal works, the property is not the sole security for the bonds, as the credit of the municipality is pledged. The bondholder is therefore suitably safeguarded even if the entire cost of works be raised by bonds. Indeed, such procedure is usually the only one possible in the case of new works, and is justified by the fact that the anticipated life of the works at that time is 50 years or more; but in the case of enlargements or extensions it is certainly a fact that conservative financing would require that such works be self-supporting and that neither the amount nor term of bonds be greater than would be proper in case of private corporation ownership.

*This statement must not be taken to mean that it would be good corporate financing to issue bonds to the extent of 80 per cent of its physical property; nor that items of intangible property should be omitted from capitalization.

ACKNOWLEDGMENT.—From a paper read before the New England Water Works Association, December, 1922.

When Bathtubs Were Considered a Menace

When bathtubs were first installed in the United States in the forties, the papers attacked them as extravagant and undemocratic and the doctors denounced them as dangerous to health. As usual, government was called upon to restrict or suppress the novelty by special taxes and licenses. In 1843 Virginia put a tax of \$30 a year on bathtubs, and in 1845 a Boston municipal ordinance made such bathing unlawful except on medical advice.

—*Science Service.*

Highway Routes in the New York Metropolitan District

By Harold M. Lewis

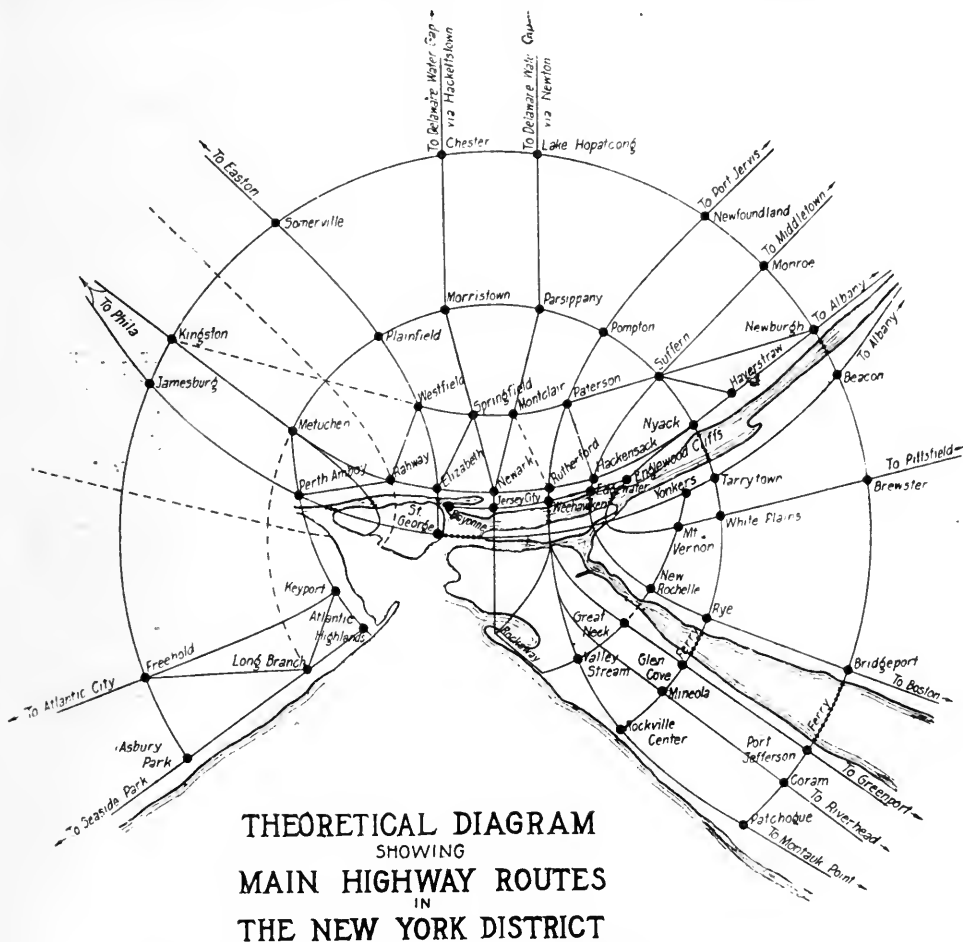
Of the Physical Survey, Plan of New York and Its Environs

ANYONE who has tried to thread his way by automobile from one point to another of the congested areas around New York City has gained some realization of the physical impediments to a systematic highway plan for this entire district. There is probably no other large metropolitan area that is so cut up by rivers, arms of the sea and mountain ranges.

Among the preliminary studies being made by the recently announced Committee

on Plan of New York and Its Environs, the existing highway facilities have received considerable attention. The accompanying drawing shows what already exists that might be made part of a diagrammatic layout, and brings out rather clearly the general problem of highway distribution through the city and its environs.

An outer circumferential route actually exists, extending from Patchogue on the south shore of Long Island across the



Sound to Bridgeport, crossing the Hudson at Newburgh and swinging through Monroe, Lake Hopatcong, Somerville, Kingston and Freehold to Asbury Park. There are well-improved roads throughout all this route; and while there are considerable irregularities in direction, the basis is there for a well-defined enveloping highway passing outside of all the congested areas and mostly through country of great natural beauty.

An inner circumferential road starting at Rockville Center passes through about the outer limits of the ordinary commuting zones, crosses the Hudson at Nyack, passes through Suffern, Morristown and Plainfield, and ends at Atlantic Highlands or Long Branch on the Jersey coast.

The main axis follows the Albany Post Road, crosses Staten Island and leads to

Philadelphia via Jamesburg. A subsidiary axis passes down the west shore of the Hudson River and also leads to Philadelphia via the Lincoln Highway. A series of three parabolas on the north with additional lines on Long Island indicate the main routes in this part of the area, and a considerable part of a similar system already exists in the southern part of the district.

Through the agency of the Port of New York Authority, steps are being taken to simplify the entry of rail traffic into the city and the diversion of through traffic around the congested points. A similar treatment of the highway traffic problem will be necessary to relieve the congestion within New York City, Newark and Jersey City. This is one of the most important problems being studied by the Committee on Plan of New York and Its Environs.

Advertising Signs Removed from State Highways

By John D. Williams

Director, Indiana State Highway Commission

TRAVELERS on Indiana state highways are impressed with the absence of advertising signs that formerly cluttered the roadside within rights of way and very frequently obstructed sight dis-

tances at curves and road intersections to the degree of menacing traffic safety. Today, through the action of the State Highway Commission, approximately 4,000 miles in the Indiana state highway system are



A VIEW OF AN INDIANA STATE HIGHWAY BEFORE ADVERTISING SIGNS WERE REMOVED



NATIONAL ROAD WEST OF INDIANAPOLIS, SHOWING THE RESULT OF THE INDIANA HIGHWAY COMMISSION'S REMOVING ADVERTISING SIGNS FROM WITHIN RIGHT OF WAY

free of such signs, and accidents on Hoosier state roads have been reduced to a minimum.

Prior to the action of the Commission, enthusiastic tradespeople had been placing signs at the most advantageous places, which in many instances were at dangerous crossings and sharp turns where motorists are forced to slow down. The result was that as many as twenty big signs were crowded into a small area, and in some instances view of the road ahead was impossible. Lack of sufficient sight distances, which the Commission holds must be at least 300 feet in both directions on curves, made accidents inevitable. The signs also entailed much unnecessary work when cutting weeds with mowers, opening drainage ditches and the like. For these reasons the removal of some of the signs was necessitated, while others which did not interfere with work or traffic were allowed to remain. This called forth protests from owners, who charged discrimination.

These conditions resulted in an order by the Commission that all signs of publicity nature must go within the rights of way on state roads. In order to work no hardship on anyone and to give owners of expensive signs time in which to remove them if they so desired, the Commission allowed one year for this work. At the expiration of twelve months, crews were sent out by the maintenance department and removed more than

one million signs, chiefly placards tacked to fences and trees, and small signs erected on telephone and telegraph poles.

In only a few instances was the Commission's order resented to the extent that, when signs were torn down, tradesmen again erected them. In such cases, after the signs were removed for the second time by the highway department, no further effort was made to replace them.

Removal of the advertising signs developed the fact that this form of publicity was used principally by small dealers who spend little money in printer's ink. This class were the chief protestants against the order. Larger firms have cooperated with the Commission to clear roads of signs, taking the position that, in this age of greatly augmented motor traffic and higher speed of travel, roadside advertising is obsolete and that newspapers and magazines are the most profitable mediums for stimulation of trade.

The only signs now permitted on Indiana roads under jurisdiction of the State Highway Commission are those erected by the department, calling attention to the number of the road, dangerous cross-roads, grade crossings, steep hills, narrow stretches, etc., and similar warning signs put up by motor clubs cooperating with the Indiana Commission to make safer automotive travel in this commonwealth.

Taxes versus Improvements in Relation to Street Lighting

By Charles J. Stahl

IN almost any city or village throughout the country there are those who claim that the present rate of taxation is too high. A discussion of the subject usually leads to comparisons between past and present rates, on which basis it is, of course, plain that taxes are higher, and in most communities are going to be still higher. Further thought on the subject soon leads to the conclusion that we should not judge by the old standards and that we must expect advanced rates or diminishing services at the old rate, when the purchasing power of the dollar grows less. None of us, however, are satisfied to accept diminishing services from the state, county and municipal administrations; in fact, quite the reverse is true, for, as our plane of living advances, governmental operations must adjust themselves and advance accordingly. The traffic squad is an added expense, but no one advocates its elimination under the present intensive use of automobiles.

Some point to the fact that the purchasing power of the dollar has advanced somewhat during the last two years, but, on the other hand, it is quite plain that taxation has been allowed to lag far behind actual requirements. This was particularly true during the war period, when domestic expenditures were curtailed and local benefits sacrificed in order to participate to the fullest extent in operations abroad. Then the administrations immediately following the war encountered a period of downward trend in prices and a delay in the resumption of normal activities, so they not only hesitated to enlarge community expenditures but allowed taxation to lag, and in many cases they passed on to this day some substantial deficits as well as inadequate tax rates.

The foregoing remarks have a bearing on the subject of this article because present advocates of more and better street lighting constantly encounter objectors who insist that nothing should be done, that their tax rate is already too high, that an increase is preposterous, and that a decrease

must in some manner be brought about.

The Bugaboo of Tax Rates

Recently in a Council meeting of a town of about 2,000 population there was a lengthy discussion on why the town should not pave its main street full width from gutter to gutter. A state road, laid out to go through the main street of the town, was to be paved for a width of about 24 feet, which within the town would leave at least 10 feet of dirt at each side between the paving and the curb. Although the complete job could be done best and on a most economical basis right along with the state's or counties' construction, it was argued that taxes were already too high and that if they should be allowed to advance further it would become impossible to induce new citizens and commercial enterprises to locate in their community. It seemed to be taken for granted that anyone seeking a new location would be more concerned about the tax rate than the inducements the community offered in the way of public improvements and the display of progressive spirit—but imagine what sort of merchant would choose for a new location a town having for its main street a "through" strip of paving with 10 feet of dirt, often mud, on both sides. "Strictly a 'no-stop' town" would be the progressive merchant's diagnosis, and his investigation would not extend to the point of inquiring about the tax rate.

It is not the purpose of this article to advocate high taxes but rather to accept what tax rate becomes necessary in order not to fall far behind in public improvements. No doubt some people are drawn to a community having a reputation for low tax rates. Like attracts like: in other words, the community that is saving, above all else attracts the man whose main ambition is to save.

Business men embarking on new ventures, however, will look first of all for a progressive city. It is true that they may inquire as to the tax rate and, if it is low

and the other qualifications are present in fair measure, so much the better. But when it comes to choosing between a city of low tax rate and subnormal public improvements as against a progressive and thoroughly modernized city with a higher tax rate, they invariably choose the latter, for taxes, after all, are a small item in operating costs, and the characteristics of the community are of utmost importance.

Street Lighting and Safety

Let no merchant whose shop faces on a poorly lighted street persuade himself that this is a small matter, even if he does close his doors at nightfall! People learn to avoid his street at night, and they unconsciously obey the same instinct in daylight.

Let no citizen whose community still does without modern street lighting believe that such denial is in the interests of true civic economy, for the well-lighted towns are the well-linked towns, and the real gains in values and business that follow the installation of modern street lighting equipment offset its costs many times over.

And what about the benefits that modern street lighting brings to all the people

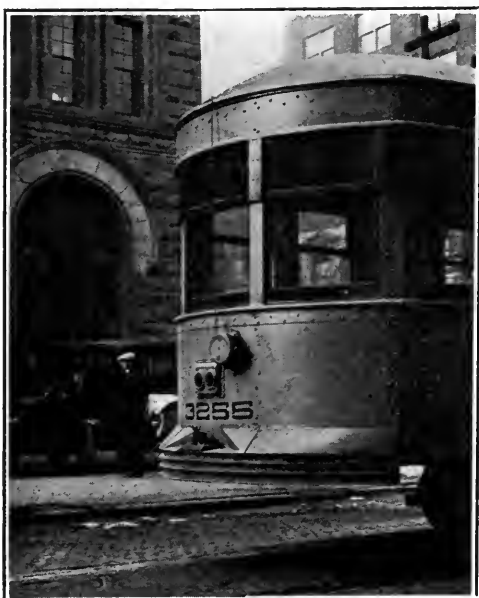
in a community? It means safety for women and children who must traverse the streets alone after nightfall; the prevention of many painful and costly accidents; the enhancement of property values and the betterment of living conditions.

Does the highwayman select a well-lighted street for his operations? There is more for the overworked policeman to do in one poorly lighted block than in four that are properly illuminated.

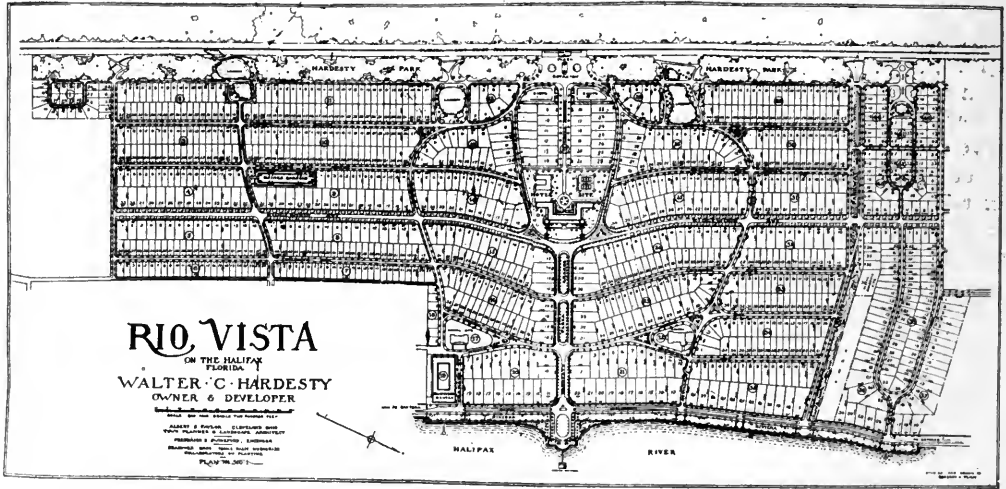
Ornamental street lighting does more towards modernizing and enhancing the appearance of a community than any other improvement of equal cost. An ornamental street lighting installation works 24 hours per day, for if properly selected it improves the appearance of the street by day as well as by night. It beautifies the city, develops civic pride and makes knockers boosters. The feeling of safety and cheerfulness alone are worth the cost, and, after all, the best thing we do on this earth is to build good homes for our families. In our home and home town we derive our greatest satisfaction, and no town having once experienced the benefits of good street lighting is ever satisfied with less.

A New Safety Measure

A NEW safety measure is now being applied in Detroit by the installation on street cars of "Stop" lights similar to those commonly used on automobiles. These give ample warning to cars or automobiles following that the street car is about to stop, or at least is slowing down for some reason. This practically eliminates the danger of a second car's crashing into the first, or of some auto driver's failing to see that the car is stopping, in time to avoid striking a passenger who is alighting. As shown in the illustration, the "Stop" light is built into the rear of the car and consists of two lights side by side, one of which is red and the other green. When the car is moving forward the green light burns, but when the power is turned off or the brakes are applied, the green light goes out and the red one burns as long as the car stops. When it again starts forward, the process is reversed, the red light going out and the green one coming on.



"STOP" LIGHT ON DETROIT STREET CAR



A New Town in Florida

By A. D. Taylor

Landscape Architect and Town Planner

FLORIDA is the nearest available winter playground and refuge from cold weather for over half the population of the United States. It is certain to continue to grow. Therefore when development of Rio Vista was considered it was decided to make a thorough study for a permanent town which should increase in beauty with its growth. The accompanying plan was the outcome.

Situated on the Halifax River, on the East Coast and between the established home communities of Daytona and Ormond, a residence town is called for with merely local business facilities. The 400-acre tract lies $1\frac{1}{2}$ miles along the Florida East Coast Railroad and nearly a mile along the river. The topography shows a slope from the river up to a ridge 23 feet high occupied by Ridgewood Avenue and descending toward the railroad to the west. Ridgewood is the extension of the finest residence avenue of Daytona. A hotel is the central feature in a tourist residence town. This is placed on the ridge at the cross axis, with a natural point in the river bank for eastern terminus, and the railroad plaza as the western terminus of the central motif.

The area between Ridgewood Avenue and the river has natural high value. In

order to raise the selling value of the area behind the ridge near the railroad, 10 per cent of the property, or 40 acres, was devoted to wooded park with natural lagoons and with fine tree growth preserved as screen for the houses fronting this park. It also presents a most inviting aspect to passing travelers, who have been accustomed all through Florida to see from the train the rear quarters of negro colonies.

The other main attractive features are those of the superb water-front, which, instead of having filled lots between the Dixie Highway and the water, will be a palm-planted esplanade of exceptional possibilities. An existing canal near the north is used as the reason for a parkway connecting the water-front and the large park, thus giving park circulation and an organization to the plan.

The street system is just enough off the gridiron to appear to be curvilinear, without the confusion of a full curvilinear system. The curved disappearance of the avenues in perspective and the curved cross-streets are enough to accomplish this. The spacing of the avenues is such as to secure lots varying from 120 to 170 feet in depth, and from 50 feet front to 120 feet, with a proportion of bungalow lots 65 by 85 feet. The curved streets allow lots fac-

ing all points of the compass. A church and a school site are so worked in as to help the symmetry of the plan without losing efficiency, and a business center on Dixie Highway in the form of a hollow square, presenting an attractive front on all sides, helps rather than harms the town. Shops are also planned on the Station Plaza.

This entire development is a straight business proposition, and the owner sees definite cash return in departing from the engineers' gridiron plan and giving up salable area to purposes of beautification. He also knows that the construction cost is lessened rather than increased by careful plan-

ning at the start, and that speedier sales and higher values are his reward.

The development work at Rio Vista is moving forward rapidly. The erection of a casino of Spanish design has been completed. A riding academy, a bath-house and five residences are now under construction. The Plaza Grande has been graded and trees have been planted its entire length and also the entire length of the Dixie Highway and on all the other streets. Part of the White Way system is already in illumination. The laying of rock for the foundation of streets is progressing rapidly and the city of Rio Vista is fast becoming an actuality.

A Sign Which Prevents Accidents at a New Jersey Turnpike Intersection

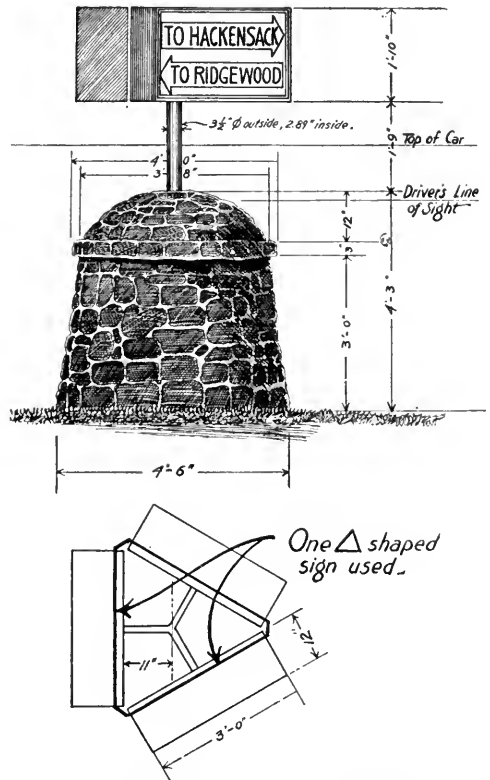
By Roscoe Parke McClave

County Engineer, Bergen County, New Jersey

THE intersection of the Franklin Turnpike and the road leading to Paterson, N. J., over the Saddle River, is dangerous, because the greater amount of traffic going through Bergen County and bound for New York State travels over the Franklin Turnpike, and there is more or less confusion when the autoist comes to this point. The county of Bergen, realizing this, first provided a triangular wooden sign, giving the directions to the various points.

This sign gave the information desired, but the intersection itself was not large enough to permit free and convenient travel for the traffic going in the various directions. The intersection was then widened, and the new sign that was placed there contained the same direction information given on the first sign. This second sign is considered an improvement on the old wooden one. It is made of glass and illuminated from within, and is placed at a lower level, so that the motorist can more easily observe the road and read the sign, day or night.

At least 20,000 cars have passed the sign in one day, and, in a great many instances, the drivers are strangers looking for direction. It has served its purpose by eliminating confusion and accidents at this important Bergen County intersection.



ELEVATION AND PLAN OF FRANKLIN TURNPIKE SIGN

Sending Fire Apparatus to Neighboring Towns

DO you send apparatus on call to adjacent towns? If so, under what arrangements?

These two questions were asked by THE AMERICAN CITY recently in a letter to a typical list of fire chiefs in cities large and small throughout the United States. Of the 304 responses received, 237 answered "yes" and 67 answered "no" to the first inquiry. An analysis of the replies shows that most of the negative replies came from very small or isolated places. A community having only a single piece of fire apparatus, for example, says, "Cannot take risk of leaving city unprotected." The Fire Chief of another city reports that the nearest town having water-supply is 45 miles away and has plenty of equipment.

It is obvious that with the well-paved roads and the motor-driven apparatus which are becoming increasingly common, many fire departments are now able to render help to neighboring communities over a much wider area than was formerly possible. Of the communities aided some are able to reciprocate in a similar emergency. In such cases no charge is ordinarily made by either city to the other. Warsaw, Ill., reports, for example, that Keokuk, Iowa, Hamilton, Ill., and Warsaw work together in case of a large fire. El Centro, Calif., says: "We have an understanding with Calexico (11 miles), Bramley (15 miles), and Imperial (4 miles) that we will all help each other when called on to do so. We all have pumpers. We also help Holtville or Seeley free of charge if they need us." Elyria and Lorain, Ohio, report a reciprocal arrangement. New Haven, Conn., renders help without charge to any city requesting it which maintains its own fire department. Gardiner, Maine, reports a mutual agreement with Randolph and Farmingdale. The department in Park Ridge, N. J., responds to a code call known to all companies belonging to the New Jersey and New York Volunteer Firemen's Association, covering Bergen and Rockland Counties.

Some of the larger cities have established definite rates at which aid will be

offered to near-by communities. Here are some of these terms, as reported:

HARTFORD, CONN.—To towns not under mutual agreement, \$50 per hour is charged.

EVANSVILLE, IND.—Town calling pays all expenses. No charge for service.

DAVENPORT, IOWA.—\$25 for each piece of apparatus sent out.

SALEM, MASS.—Mutual agreement with Lynn, Peabody, Beverly, Danvers and Marblehead, for which no charge is made. If call comes from towns not having apparatus to return service, a charge of \$50 is made.

DETROIT, MICH.—To corporate villages and townships, \$25 per hour for each company from time of leaving until return to quarters.

GRAND RAPIDS, MICH.—For each piece of apparatus, \$25 to move apparatus, \$25 per hour, and \$5 per mile both ways.

ELMIRA, N. Y.—\$50 per run to adjacent towns; to larger towns, no charge.

JAMESTOWN, N. Y.—\$50 per hour for time from leaving station to return.

CLEVELAND, OHIO.—Flat rate charge of \$350 for each call. Mutual agreement with East Cleveland and Lakewood by which no charge is made.

COLUMBUS, OHIO.—\$250 per call. Contract for next year will be on basis of \$1 per \$1,000 tax valuation of all property on tax duplicate.

Several chiefs, especially of the volunteer fire departments in the smaller communities, report that while no regular charge is made for outside help, donations are accepted from individuals served. Among these replies are:

HOLLISTER, CALIF.—"Free of charge upon call for assistance. If parties making call wish to make a contribution to the department, it is acceptable."

ARCADIA, FLA.—"Parties protected usually pay the boys."

DOWNERS GROVE, ILL.—"No charge. Always get sums donated from \$25 to \$150."

ELGIN, ILL.—"No charge made. Donations sometimes made to pension fund."

MANNING, IOWA.—"No agreement, but expect towns to contribute to apparatus needed from time to time."

DURAND, MICH.—"Insurance company pays firemen and for chemicals used. No charge for equipment."

In some other small cities and towns a regular charge for serving their neighbors is in force, as for example:

ATHENS, GA.—\$20 for apparatus and \$2 per hour for each man sent.

ALEDO, ILL.—\$5 per mile one way and all expenses, including responsibility for any loss or damage from the time of leaving until returning to engine house.

NAPERVILLE, ILL.—\$50 each call, or \$50 each hour or part of an hour.

NEVADA, IOWA.—\$25 truck service charge.

MAYSVILLE, KY.—Flat charge of \$100 for each call.

MILLBURY, MASS.—\$100 per call.

ORANGE, MASS.—\$50 to \$100 for use of machine and 50 cents per hour for firemen's time.

PELICAN RAPIDS, MINN.—Minimum charge of \$25 for use of truck and \$1 per hour for men attending fire.

WHITE BEAR LAKE, MINN.—\$25 for use of truck.

BRYAN, OHIO.—Reciprocal arrangement with all motorized towns within \$25-mile radius for assistance without charge. Unmotorized towns unable to reciprocate are charged \$35 per hour or fraction thereof, for use of pumper, hose and six firemen.

LOUISVILLE, OHIO.—\$1 per hour per man for dura-

tion of fire, plus charge for chemicals, gasoline and oil.

OXFORD, OHIO.—No charge to towns. County fires charged \$10 for first two miles plus \$2 for each additional mile. Men receive \$1 for first hour and \$50 cents for each additional hour or fraction.

BERWICK, PA.—Contract with East Berwick, which pays 62 cents per capita per year.

MEADVILLE, PA.—\$50 for first hour; \$25 each for additional hours.

From Delaware comes the report that the state is well equipped with rural fire companies; that these are ordered out first, and that the Wilmington Fire Department will send more apparatus if needed.

In Iowa the State Fire Prevention and Inspection Bureau is promoting cooperation such as in Fort Dodge, where short-length hose couplings are being made up to fit all surrounding towns.

The one touch of humor in the replies comes from Mobile, Ala., whose Chief reports, "Yes, we respond when requested. We have no contract for this work. We take what is offered, and most of the time we get only a 'card of thanks.'"

Standards Immediately Applicable for School-Building Programs

STANDARDS which have received very general recognition among school administrations and which are applicable to metropolitan and suburban regions are incorporated in the "Report of Progress" of the Plan of New York and Its Environs, published February, 1923. These studies of school facilities have been made by two of the experts of Teachers College, Columbia University—George D. Strayer, Professor of Educational Administration, and N. L. Engelhardt, Professor of Education.

In the region surveyed there are 787 separate administrative units for public education. Out of a daily attendance of 1,300,000 children, about 200,000 pupils are on part time. New facilities are therefore needed for 100,000 children at the present time. At \$400 per pupil, a conservative figure, \$40,000,000 is needed for buildings to take care of part-time pupils.

Further, it is estimated that about one-third of the children are housed in buildings that are most inadequate—some insanitary, some dangerous from fire-hazard standpoint, and so forth. To make facilities adequate, an additional expenditure of \$200,000,000 will be required. The total expenditure for buildings, without allowing for growth of population, is thus \$240,000,000.

An estimate of the increase in school population during 1922-30 is placed at 110,000, and for the decade 1930-40 at 100,000. These add \$44,000,000 and \$40,000,000 to the cost of buildings.

In addition, funds for school sites are to be provided.

The more important of the standards for

school-building programs as they touch city planning interests are:

Accessibility

1. Children of the elementary school grade should not be required to travel more than one-half mile to school. The children of junior high school (intermediate school) should not be required to travel more than one mile to school except in the sparsely settled areas where the organization of a school large enough to provide the range of studies desirable may require that they travel farther, or that transportation be provided. In the location of senior high schools, lines of transportation and the securing of sufficiently large site should be taken into consideration, rather than mere accessibility.

It has been found possible in a number of the city areas in which we have worked to provide sites for high schools in the outlying districts. This results in high school children traveling in street cars that would otherwise be little occupied in going to school in the morning, and traveling against, not with, the heavy traffic again at the end of the school day.

Area of Site

2. We propose that an elementary school building, except in the congested areas, have a site of not less than .5 acres; where the unit becomes large, that at least 100 square feet of space per pupil be provided. For congested areas, adequate facilities in gymnasiums and play courts or decks are required.

For junior high schools (intermediate schools) we propose that a site of not less than 8 acres be secured, except in the most congested areas, where special facilities, as suggested above for the elementary school, be provided.

For senior high schools we propose that an area of not less than 12 acres be made available, except in the case of the more congested areas, in which case the facilities for gymnasiums, play courts, and decks will need to

receive special consideration. In all cases in congested areas the location of buildings must take account of the availability of play spaces in parks and playgrounds.

Size of Buildings

3. From the standpoint of economy in the erection of the building, in its maintenance and up-keep, and in the administration and supervision of the school, we propose that, except in sparsely settled areas, no elementary school be constructed of less than 24 classroom units. Wherever possible, this unit should be increased in size. An elementary school unit of 60 classes is not too large.

For junior high schools (intermediate schools) a unit planned to accommodate not less than 1,200 children should be constructed. Considerable advantage in the development of an adequate program, in the cost of maintenance, up-keep, and administration will be effected if this unit can be increased to a building accommodating 1,500 to 1,800 pupils.

For senior high schools a minimum of 1,500 pupils should be provided for in a single unit, with the possibility of increasing the size of the unit to 2,500 to 3,000.

In the somewhat less densely populated part of the area under consideration there would be a real advantage in the development of an elementary school unit to include a kindergarten and the first six grades, and of only one other unit to include the junior and senior high school groups. In this way the six-year high school could be so located as to draw from the area immediately surrounding a total of 600-1,200 pupils as over against the many small (100-600 pupils) and inefficient schools maintained

where the senior high school is organized as a separate unit.

Construction

4. We believe that the buildings to be planned should in the case of all, except temporary or one-story structures, be of fire-proof construction; that they should be so flexibly constructed as to admit of rearrangement of spaces within the building and of additions to the building with a minimum of cost for reconstruction; that the standard unit for elementary and for secondary schools should provide 18 square feet of floor space and 200 feet of cubical contents per pupil; that window areas should be from 20 to 25 per cent of floor area of the room which they are intended to light; that artificial lighting should be so located as to provide for an even diffusion, as well as a proper number of foot candles on every working space; that adequate sanitary fixtures to include toilets, drinking fountains, wash-basins, should be provided on each floor of each school building; that corridors should be reduced to a width necessary to carry the load imposed upon them; that stairways should be self-contained units with openings into other parts of the building through partitions made of metal and wire glass, thus becoming the very best type of smoke-proof and fire-proof exit; that in larger schools providing special facilities in the industrial arts, shop construction should be utilized rather than the more expensive schoolhouse construction. The planning should, as well, carry further certain investigations which we have already made with regard to the number and size of special rooms to be provided, especially for junior and senior high schools, with a view to utilization of the entire plant during the whole school day.

Wise Public Giving and the Uniform Trust for Public Uses

“WHEN a person contemplates the creation of a trust for some charitable object and is uncertain as to the precise methods of carrying his purpose into effect, or contemplates benefiting a class of persons, an organization or a group of organizations the perpetuity or management of which may be open to question,—in these and similar cases of doubt and uncertainty he may wisely make his donations and bequests to a suitable trust company or bank having trust powers, which is prepared to receive trusts under an agreement known as the Uniform Trust for Public Uses, and thus avail himself of suitable provisions therein made for future adjustments and adaptations safeguarding his original intentions and tending to reduce causes for litigation to a minimum.”

The foregoing paragraph is from a resolution adopted at the Joint Annual Meeting of the Home Missions Council (the national organization of 43 missionary societies in the United States and Canada) and the Council of Women for Home Missions (also a national organization representing

20 constituent boards) held at Atlantic City, January 19, 1923.

In presenting this resolution, the Joint Committee on Trusts in its report made the following observations:

“We recognize the valuable services which the community trust can render to its own community and also see clearly that the Uniform Trust for Public Uses meets equally the same local needs and at the same time makes full provision for non-local benefits of a wider scope, both national and world-wide, in which missionary organizations are interested.”

“One of the great benefits of the Uniform Trust is that it may be in use all over the country, may be known in every part of the land, and lends itself to common understanding and common publicity.”

A complete copy of the Committee's report and of “The Uniform Trust for Public Uses” may be obtained from Daniel S. Remsen of the New York Bar, 60 Wall Street, New York City.

Michigan Practise in Gravel Road Construction

By Levi H. Neilsen

Deputy State Highway Commissioner, Lansing, Mich.

THE specifications for the construction of gravel roads in Michigan in force in 1906, when Michigan began its construction of gravel roads under a uniform specification, provided that 60 per cent of the material should pass a 2½-inch screen and be retained on a screen having 8 meshes to the linear inch. When patrol maintenance was first organized, it became apparent that the maximum size for the top course was altogether too large, although it had already been reduced from 2½ to 1½ inches. Present specifications provide that top course material must pass a 1-inch laboratory screen and 75 per cent of it must be retained on a screen having 8 meshes to the linear inch; and that base course material must pass a 2½-inch screen with 60 per cent retained on a screen having 8 meshes to the linear inch. These changes have been found necessary by the experience of the State Highway Department in patrol maintenance of gravel-surfaced roads.

Road work in the various counties in Michigan is handled by a Board of County Road Commissioners consisting of three members with staggered six-year terms. These men comprise an administrative board and are appointed by the Board of Supervisors or elected by popular vote, according to the option of the Board of Supervisors of each county. This board engages an engineer to direct the maintenance and construction work, or a qualified superintendent to direct the field operations.

Surface Maintenance

On gravel road work a variety of equipment for keeping the surface smooth will be found, depending on the location and the amount of traffic using the road. It has been found necessary in some cases to drag or scrape the surface once a day regardless of weather conditions. To do this, light, one-man graders drawn by a single team of horses are very frequently employed.



APPLYING BITUMINOUS MATERIAL TO A GRAVEL ROAD IN MICHIGAN

Trucks on which a scraper has been fixed under the frame between the front and rear axles have shown considerable success in this work. Some counties use hoes drawn by tractors, others use light graders drawn by tractors. Dragging or scraping is done as often as necessary to keep the road in good condition. On heavy-traffic roads, it has been found necessary to keep a small amount of loose gravel on the surface so that there will be some material to move around to fill the holes and ruts and keep chatter-bumps out.

The charges below include such work on the grade as snow removal, markers and signs, equipment rental, overhead, supervision, etc., so that the costs given represent a great deal more than the surface maintenance of the pavement itself. Average costs based on a mileage of a little over 6,000 miles in 1922 for the mainte-

nance of various types of roads per mile, are as follows:

| | |
|---------------------------------|----------|
| Earth roads | \$179.05 |
| Stamp sand roads..... | 277.10 |
| Gravel | 444.63 |
| Macadam | 537.39 |
| Bituminous macadam roads | 350.63 |
| Bituminous concrete roads | 342.73 |
| Cement concrete pavement..... | 553.21 |
| Unclassified | 341.56 |

Experiments in Surface Treatment of Gravel Roads

Extensive experiments in the use of a variety of materials for the surface treatment of gravel roads and the use of light oils and calcium chloride for dust-laying have been conducted in conjunction with the Highway Department of the College of Engineering of the University of Michigan. The tentative conclusions reached by G. C. Dillman, Maintenance Engineer of the Highway Department, and Herschel C. Smith, Assistant Professor of Highway Engineering, University of Michigan, are as follows:

Any surface treatment of gravel roads for dust prevention should extend the full width of the traveled way rather than over a portion of the center of the road.

For general use as a dust palliative on Michigan gravel roads, calcium chloride is the most satisfactory from the point of view of general applicability—application by unskilled labor and adaptability to various types and conditions of road. It is impossible, with these service tests of one season, to reach conclusions as to its effectiveness and economy compared with other dust palliatives investigated.

No distinction can be made between granular and flake calcium chloride as to effectiveness.

Calcium chloride supplied in the 100-pound bag container is more economically handled than that supplied in the 350-pound metal drum, and it appears that it might be profitable for the necessary storage to be provided so that this economy could be realized.

The use of calcium chloride slightly increases the cost of blade maintenance.

It appears that a light oil having the following properties can be used on a gravel road even under a traffic of 1,500 vehicles per day, in case there is a sufficient amount of loose material on the surface to absorb at least 75 per cent of the oil:

| | |
|---|---------|
| Specific gravity 25° C./25° C..... | 0.910 |
| Specific viscosity 25° C.-50 cc..... | 10.7 |
| Flash point open cup..... | 95° C |
| Bitumen soluble in carbon disulphide..... | 99.83 |
| Loss at 163° C. 5 hrs. 20 C..... | 15.31 |
| Penetration of residue, 25° C..... | Residue |

Where the light oil is applied in a greater quantity than that which the loose material will absorb, it forms a thin glazed surface in the compacted portion of the road, and the loose material which is quickly swept from the road cannot be successfully replaced, as there is no tendency for material returned to the surface to adhere and become incorporated in the surface.

It is impossible, as yet, to standardize the use of light oil as a dust palliative for Michigan gravel roads, because of the necessarily exact relation that should exist between the amount of oil applied and the amount of loose material. In no case should more than $\frac{1}{8}$ -gallon per square yard be applied, and the amount should vary with the amount of loose material on the surface.

The heavier bituminous materials used cannot be applied for a dust preventive on Michigan gravel roads except as a material for forming a bituminous surface.

Bituminous Surfaces

Regardless of the material used, a successful bituminous surface cannot be formed on a gravel road unless there is first a firm, even, hard surface on the gravel road which is free from loose material.

Bituminous surfaces formed within the limits of the preceding paragraph and with the materials and amounts used in these tests, do not disappear uniformly.

It appears that bituminous treatments made without top dressing and expected to disappear annually, although apparently satisfactory during the summer months when used on a high type gravel surface, will leave the road in such shape that succeeding treatments will be impracticable unless the roadway surface is reconstructed, and, furthermore, will impair the quality of the surface if it is to be maintained thereafter as an untreated gravel road.

It appears that it would be possible, however, to develop a bituminous surface, using a suitable metal top dressing, on firm, even, hard, well-cemented gravel roads, of which there are relatively few miles in Michigan.

ACKNOWLEDGMENT.—From a paper read before the Annual Convention of the American Road Builders' Association, at Chicago, January, 1923.

Chamber of Commerce Activities in Public Affairs

"Go Through and Graduate"

ATTLEBORO, MASS.—Last spring there was a great deal of dissatisfaction among the School Committee and the teaching force of Attleboro on account of the attitude of the City Council in cutting down the appropriations for the school system. The main dissatisfaction grew out of a feeling that no advancement in salary was to be given for the next school year. This actually happened, and as a result a large number of our teachers resigned and went elsewhere. The matter came up before the Board of Directors of the Chamber of Commerce, and we planned a definite campaign last fall to create the right feeling among the school teachers, the City Council, and the community at large. The plan developed as follows:

1. To give a reception to the school teachers, the City Council and the School Board in the Chamber of Commerce Hall to welcome the new and the old instructors and to create a better feeling among all present.

2. To help parents to understand the value of an education for their children, and

3. To stimulate the children's interest to continue their studies and to graduate.

The first feature of the plan was carried out very successfully and was reported as one of the most important civic gatherings ever held in Attleboro. The result has been an undeniably better understanding of the educational problems of the city on the part of the business men, and stronger confidence on the part of the teachers and the school officials in the readiness of the business public to cooperate with them. A secondary result has been the creation of a fine spirit of hospitality, especially appreciated by the new teachers, who constitute nearly one-fourth of the total number.

In working toward the second object of

the plan, the following letter was mailed to parents, signed with facsimile signatures of the members of the Educational Committee:

AN OPEN LETTER TO PARENTS

To bring children into the world, and be responsible for their development, is a great privilege, as well as a responsibility. To clothe and feed them, to watch them grow, to educate them, and then to see them take their places as respected citizens is really a wonderful source of satisfaction to parents.

While the Attleboro Chamber of Commerce is a commercial organization, it is vitally interested in all civic and welfare work that helps to make the city a better place in which to live and do business.

In nothing, however, has it a deeper interest than in Attleboro's schools and the education of her boys and girls. In this Chamber you will find many men whose greatest regret is that their early education was incomplete, and who now realize what a great

IT PAYS TO GRADUATE



IF you ever hear of a boy or girl who wants to quit school, when it is unnecessary; if you ever hear of parents who are thinking of putting their children to work, when it is unnecessary, just bring these figures to their attention.

Every day spent in school pays the child \$9.

Here is the proof, based on the wage scale of 1913:

Uneducated laborers earn on the average of \$500 per year for forty years, a total of \$20,000.

High school graduates earn on the average \$1,000 per year for forty years, a total of \$40,000.

This education required twelve years of school of 180 days each, a total of 2,160 days in school.

If 2,160 days at school add \$20,000 to the income for life, then each day at school adds \$9.25.

The child that stays out of school to earn less than \$9.00 a day is losing money—not making money.

These figures are based on an investigation made by Dr. A. Caswell Ellis of the University of Texas, at the request of the U. S. Bureau of Education.

LEAFLET USED IN ATTLEBORO CAMPAIGN

Copyright, 1922, Harter School Supply Co.

handicap it has been to them. Perhaps you who read this have been so handicapped and thereby kept from realizing some great ambition.

Attleboro's best asset is her schools, and we are sure that it is a tragedy when a child is obliged to leave the public school before graduation. We want them and you want them to get all the education possible before they accept the responsibilities of tomorrow.

The Chamber of Commerce, in the spirit of community helpfulness, is planning to mail from time to time to the students of the upper grades interesting circulars along the order of the ones enclosed, which will tell briefly and show by suitable pictures the value of an education. These, it is hoped, will encourage the boy or girl to continue in school and take advantage of an education offered free right here at home. We know that you will welcome this help and will give us your hearty cooperation.

When your son or daughter receives letters from us later on, encourage him or her to read them, and thus by cooperating, worth-while results will be forthcoming.

With all good wishes, we remain

Most sincerely,

EDUCATIONAL COMMITTEE OF THE ATTLEBORO
CHAMBER OF COMMERCE.

Two leaflets were enclosed showing the value of a high school education.

It is intended to send letters to the students every six weeks up to the beginning of school next fall in order to create a much greater interest in school work. The ten leaflets which we are using were secured from the Harter School Supply Company, of Cleveland, Ohio, and they put across a lesson that is well worth while. The students to whom we are making our appeal are in the grades from the sixth to the first year of high school. In the words of one of the leaflets:

"You must learn if you wish to earn."

G. CORNELIUS BAKER,
Secretary, Attleboro Chamber of Commerce.

Memorial Bridge from Portsmouth, N. H., to Kittery, Maine

PORTSMOUTH, N. H.—The new Memorial Bridge connecting this city with Kittery,

Maine, which will shortly be ready to turn over to the proper authorities for an official opening, is expected to become a factor of great importance in improving transportation between northern New England and Canada and the rest of the country.

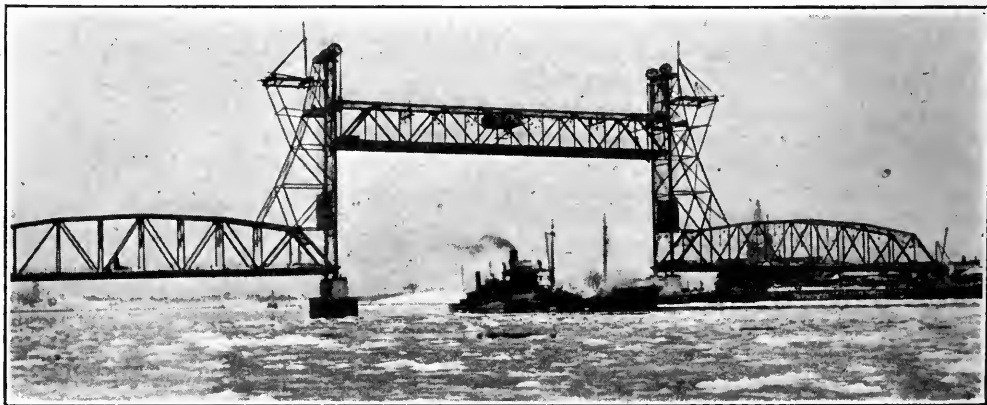
The structure proper, which is being built by the American Bridge Company, will cost \$1,500,000 to build. The United States Government contributed \$500,000, and the states of New Hampshire and Maine equal amounts. In addition, the city of Portsmouth is expending over \$150,000 for approaches, connecting directly with the two main streets of north-and-south traffic through the heart of the city. The state of Maine is expending over \$200,000 for approaches at Kittery. The total cost of this massive improvement will easily total \$2,000,000.

The Portsmouth approach starts right in the heart of the city, then the bridge crosses the deep waters of the Piscataqua River, with a big draw-span, and then the bridge continues to Badgers Island and on to the mainland.

The draw-span weighs 750 tons, is 300 feet long, and is considered one of the highest lift-spans in the country. Electric-driven weights raise the span 185 feet in the air, allowing the biggest ships to pass up the river.

The Piscataqua River never freezes, because of its deep and fast current, making river traffic continuous the year around. The Portsmouth Navy Yard is located at the Kittery side of the new Memorial Bridge.

The bridge will divert several thousand



NEW MEMORIAL BRIDGE BETWEEN PORTSMOUTH, N. H., AND KITTERY, MAINE

automobiles during the summer months from the toll-bridge of the Boston and Maine Railroad, for years the connecting link between the two states. The Memorial Bridge will have no toll charges, and will shorten the route and save considerable time.

The planning of the bridge so as to have such a high lift is indicative of the efforts of the Portsmouth Chamber of Commerce towards making this city a real live port. The New Hampshire Legislature is planning for a State Pier that will be located above the bridge.

ROBERT J. EUSTACE,
Managing Secretary, Portsmouth Chamber of
Commerce.

A Zoning Ordinance for Oneonta

ONEONTA, N. Y.—With the appointment of a City Planning Commission and the engagement of a consulting engineer to assist in drafting a zoning ordinance, the Oneonta Chamber of Commerce has reached a desired goal.

Public sentiment was lined up in favor of the measure after the holding of four forum meetings at which consulting engineers and others spoke, and after securing a mail referendum of the Chamber membership. The zoning film, "Growing Pains," shown at a joint dinner of the Chamber Directors and the city officials, presented strong arguments for the efficacy of zoning. The erection of buildings which injured property values and which could have been properly placed through zoning regulations also helped the cause.

EVERETT HICKS,
Secretary, Oneonta Chamber of Commerce.

Everybody Is Working for Jackson's New Park

JACKSON, TENN.—This city has set aside a 5-acre wooded tract to be used as a combined park, children's playground and tourist camp. The Association of Commerce is fostering a movement by which the various civic, fraternal and labor organizations will provide the equipment and facilities for the park. The city is doing the grading, road-making and sodding. A local landscape architect has given his time to the pruning of trees and to the planting and beautifying of the grounds. The Rotary Club is furnishing the playground equipment, the W. C. T. U. the drinking fountains. Members of the Association are furnishing building

materials, and a small fund to pay for labor is to be raised by the combined organizations. The automobile dealers are furnishing all of the equipment and buildings for the tourist camp.

The park is to have a baseball diamond, a band-stand and shelter house, special seating space for band concerts, and tourist facilities, including an enclosed kitchen with gas and water, and comfort buildings. The school children of the city paid for a memorial stone and tablet and took part in services on May 1 dedicating the park as a Centennial Memorial.

EDWARD D. WILDER,
Executive Secretary, The Jackson Association of
Commerce.

Port Development in Olympia

OLYMPIA, WASH.—The major activity of the Olympia Chamber of Commerce for 1922 was the creation of a port district, with a view to constructive industrial development. This issue was carried in the November election. Since that time the efforts of the Chamber have been to assist the newly elected Port Commission in every way possible, and for our own particular share to begin the educational campaign which a little later will resolve into an intensive campaign to see that the development plan for the port and the financing of it through bonds are carried at the election proposed for this spring.

One of the fine accomplishments of the past year, brought about through this organization, was the establishment of a new boulevard lighting system for the business district. The system is now being installed.

B. F. HUME,
Secretary, Olympia Chamber of Commerce.

Relief for Traffic Congestion

MUNCIE, IND.—The three railroads passing through Muncie cross the principal streets within a few blocks of the center of the city. Traffic has been stopped by heavy freight trains for as long as 45 minutes at a time. For many years the Chamber of Commerce endeavored to correct this condition, and in turn the city officials made the same effort, but nothing was accomplished.

To-day the city officials and the Chamber of Commerce are working together on this project, and the railroads are giving us a cut-off around the city where through

freight can be routed instead of passing across the city streets. This leaves only passenger trains to interfere with traffic in the city, and with four subways we shall have what Muncie asked for for many years but never received because never before have the city officials and the Chamber of Commerce met together and gone over the various problems.

We feel that our biggest gain has been, not the elimination of railroad evils, but the securing of cooperation between the city officials and the Chamber.

S. N. VAUGHN,

Secretary, Chamber of Commerce and Commercial Club.

Five Forward Steps in Detroit

DETROIT, MICH.—On April 2, four city proposals and an amendment to the state constitution were approved by the voters in Detroit:

1. Pensioning city employees after 25 years' service
2. Accepting gift of zoo site from Detroit Zoological Society, costing \$1,250,000 over 5 years
3. Approving \$5,000,000 bond issue for extension of Department of Street Railway system
4. Approving \$12,000,000 issue of bonds for municipal power-plant
5. Adding a new section to the state constitution authorizing the Legislature to provide for the incorporation of ports and port districts, with power to engage in work of internal improvements

The constitutional amendment had the strong backing of the Detroit Board of Commerce. On a total vote of 474,549 cast, there were 266,623 votes for the amendment, and 207,926 against it—a majority of 58,697 in favor of it. Through its Port Development Committee, the Detroit Board of Commerce has already begun to plan for the necessary enabling act, which the State Legislature will be asked to pass at its next session. The committee is working with the State Attorney General's office in an attempt to work out a uniform enabling act which may be used by all the port cities. Such an act would make possible the creation of the Port of Detroit, and would permit the Port Commissioners to plan out a definite program of improvement.

C. E. BOYD,

Assistant Secretary, Detroit Board of Commerce.

Work for the Public Schools

WINCHESTER, KY.—One of the items in the Winchester Chamber of Commerce has been "Improvement of School Facilities." Efforts have been steadily directed toward having the School Board call an election for the voting of funds for this purpose. In this the Chamber was successful. Two new members elected to the School Board last fall and a third member reelected have all pledged themselves to improve local school conditions. Acting on the request of the Board of Education, the Chamber appointed an advisory school committee to study the matter of the selection of sites and the facilities which the buildings should contain, and to confer with the Board on these points.

On January 29 the citizens voted a bond issue of \$150,000, the maximum allowed by law. The Chamber of Commerce took full charge of the campaign, at the request of the Board of Education, and carried the election by a majority of a little better than three to one.

This is the second big accomplishment by the Chamber in two months. In January we promoted the road tax levy of 20 cents on each \$100 assessed valuation for a period of two years. This issue was carried in the county election by a majority of four to one.

ELLIOT G. KINGSBURY,

Executive Secretary, Winchester Chamber of Commerce.

Proportional Representation Endorsed by Sacramento Chamber of Commerce

On January 24 the following resolution was adopted unanimously by the Board of Directors of the Chamber of Commerce of Sacramento, Calif.:

"Whereas, the courts have decided that the state constitution (unless amended) will not permit the election of a municipal legislative body by the system known as proportional representation,

"And whereas, the experience of the city of Sacramento in the election of a representative council by this method has been highly satisfactory,

"And whereas, we believe the intent of the state constitution is to accord the fullest measure of home rule to incorporated cities;

"Be it hereby resolved, that it is the sense of the Sacramento Chamber of Commerce that a constitutional amendment should be passed permitting chartered cities to elect their legislative bodies by proportional representation, if they so desire."

Opening of the New Orleans Inner Harbor Navigation Canal

By Walter Parker

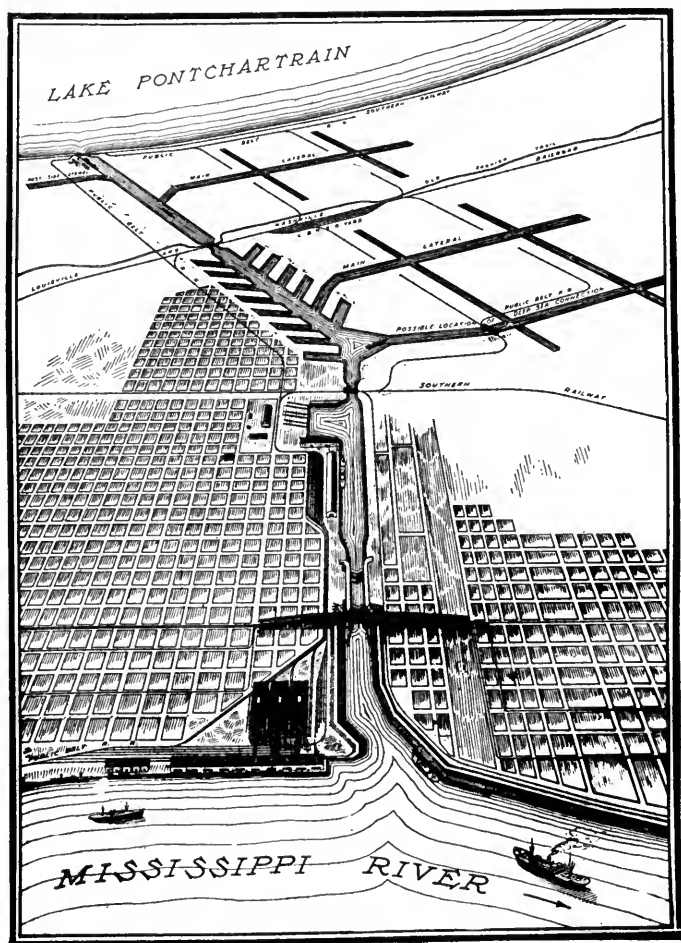
General Manager, New Orleans Association of Commerce

MAY 5, 1923, witnesses the formal opening of a \$20,000,000 facility which will mean much for the commerce of New Orleans and of the entire Mississippi Valley. It is the Inner Harbor Navigation Canal, paid for by the people of New Orleans without Federal aid, and the first step in the construction of a new ship canal from New Orleans to the sea.

Changing world trade routes made Carthage, developed Venice, forced the Panama Canal, and now gives New Orleans a world port opportunity of a new order—an opportunity to serve the Mississippi Valley efficiently and at low cost. To capitalize that opportunity, New Orleans, with public money, has built wharves, warehouses, elevators and terminals, and has now completed this great inner ship harbor and industrial canal. This makes possible complete coordination between transportation, factory and warehouse, and clears the way for continuing uninterrupted development under a well-considered policy by which both public and private enterprise may find free play under the most wholesome conditions.

Public ownership of harbor sites, as practiced at New Orleans, is not confined to the mere building and operation

of port facilities. The idea is to supply, with public funds, facilities for shippers and transportation lines which are not ready to create facilities for themselves, leased sites for those who desire temporary occupancy, and an opportunity for fee simple ownership of harbor sites for those who desire to invest in industrial facilities for permanent occupancy.



PLAN OF THE INNER HARBOR NAVIGATION CANAL
AT NEW ORLEANS

The working out of this broad policy has required many years of effort. Prior to 1896, the public owned all the river harbor frontage but had not created any machinery for the practical operation of the port under public ownership.

A Board of Commissioners of the Port of New Orleans was created by law in 1896. It sold some bonds, against the revenues of the port, and built some covered wharves, then some warehouses and other facilities. Ultimately this Board was taken out of politics and given enormous powers in the constitution of Louisiana. Its vision developed as its work progressed.

To-day the Board is composed of five of the strongest business men, appointed by the Governor for definite terms. It serves without pay, and acts as a Board of Directors. It names a general manager, who need not, at the time of his appointment, be a resident of the state, and empowers him to operate the port in the same way any other large enterprise is operated.

Inner Harbor and Industrial Canal

New Orleans covers an area of 196 square miles—all of Orleans Parish, or County. Much of this area has not been needed by the city, and had remained undrained and unused. This area, part of which has recently been drained, lies between the Mississippi River and Lake Pontchartrain, an arm of the Gulf of Mexico, and large portions of it are within three miles of the center of New Orleans' banking and business district. Lake Pontchartrain is five miles from the river. Because of the rise and fall of the river, a ship lock was necessary in order to adjust the levels in the Canal and Inner Harbor, between the Gulf and the Mississippi.

The area of low-value land adjacent to the Canal and Inner Harbor, which is available for development into privately owned harbor frontage through the dredging of lateral ship channels and canals, is 96,000 acres in extent. The land is low and level. There are no rocks in it. Spoil from the dredging of laterals and harbors raises the remaining land, giving it natural drainage. The value of this land as harbor frontage so greatly exceeds the present value, plus the cost of changing it into harbor sites, that there should be ultimately enough profit out of the increment alone to pay off

the \$20,000,000 cost of the lock and primary Canal and Inner Harbor. At least, that is the basis upon which port economists are now working.

New Ship Channel to the Sea

Silt and current create a channel problem at the mouth of the river, 110 miles below New Orleans. South Pass, where the Eads Jetties is, has served as a 31-foot channel since 1879. Some years ago the Government began work on a 35-foot channel through Southwest Pass, but has not yet succeeded in getting the desired depth there.

The completion of the Inner Harbor and Industrial Canal Lock now makes possible the dredging of a ship channel of 40 or 45 feet depth direct to the Gulf through Lake Pontchartrain, which will be free from silt and currents. Such a channel would strike the Gulf many miles east of the mouth of the Mississippi. Ninety per cent of the ships coming to New Orleans approach from the east. Through such a channel, nine out of every ten ships would save possibly 24 hours' time on every voyage to and from New Orleans. The money value of such saving, it has been estimated, would equal the cost of such a channel in a period of less than three years.

By opening such a channel the Federal Government would greatly facilitate the commerce of the Mississippi Valley, and ultimately save much monetary outlay. Sailing ships could then reach the main harbor of New Orleans under their own sails. The Inner Harbor Lock into the river harbor would also serve the new channel to the sea, which would reduce the cost of such a channel by half. Such a channel is a probability of the near future.

Port Economy

As a rule, bulk commodities are produced and made ready for market at one season of the year, and must rest in store somewhere until gradually consumed by the world. The producer needs money, and so must call upon the middleman to carry the load until consuming markets become available. It follows that the greater the cost, risk and difficulty ahead of the middleman, the greater the margin of profit and expense required by him. This means lower returns to the producer and higher prices to the consumer.

It also follows that where world-used commodities are rapidly passed into consuming markets, before required for actual consumption, they often lose relative value because they cannot again be offered for sale in world markets, as would be the case were they held in store in primary supply markets until actually required in some market. This is well illustrated by the case of cotton. Once cotton crosses the ocean to Liverpool it must carry the cost of ocean transportation, and it cannot be resold to American or Oriental mills. But so long as such cotton remains in a primary supply market such as New Orleans, it maintains its parity and may be resold into any consuming market. In most years cotton values in winter, spring and summer reflect a greater increase over fall values than the mere carrying charges amount to.

Lost motion in handling, unnecessary drayage, high costs of labor, insurance and

money, and delays which impose a burden on transportation are a factor of moment in every American port, and reduce the advantage American traders should naturally enjoy by reason of an abundance of raw material, unimpaired credit, and potentially low cost of transportation. Port congestion, resulting from lack of proper planning, from personal greed, and from an absence of unselfish guidance and authority, has resulted in high charges in many American ports, which in turn narrow world competitive markets for American products.

Knowing these facts, and given a wide-open opportunity for the testing out of schools of thought, and competitive policies, and for encouraging enterprise and business endeavor, the New Orleans port authorities have planned for to-day and to-morrow, and are in position to provide policies under which any wholesome tendency in commerce and industry may be fostered.

The Cost of Furnishing Water for City Uses

THE following tabulation shows the consumption of water by municipal departments in Springfield, Mass., during 1922. The accrued earnings to the water-works department are properly credited on the books. This amount, however, is annually charged off as uncollectible, in accordance with the provisions of the city ordinance.

MUNICIPAL USE OF WATER, 1922 IN SPRINGFIELD, MASS.

| Classification | Amounts | Gallons | Remarks |
|--|-------------|--|---------------------|
| Schools | \$8,335.80 | 125,037,000 | 92 per cent metered |
| Public buildings (other than schools)..... | 2,931.85 | 43,977,750 | 90.2 " " " |
| Public parks..... | 2,808.15 | 42,122,250 | 67.8 " " " |
| Public playgrounds..... | 452.95 | 6,794,250 | 4.8 " " " |
| Building purposes (streets and engineering department) | 286.80 | 4,302,000 | Unmetered |
| Sewer department..... | 2,578.60 | 38,679,000 | " |
| Snow removal (via sewers)..... | 1,301.33 | 19,520,000 | Metered |
| Street washing and sprinkling..... | 1,481.86 | 22,228,000 | Unmetered |
| Total of above..... | \$20,177.34 | 302,660,250 | |
| Fire hydrant service..... | 50,850.00 | (not reducible to quantities, at \$25 per hydrant) | |
| Total municipal use..... | \$71,027.34 | (as per Registrar's report) | |

Unmetered quantities in gallons are estimated and charged on a basis of 62-3 cents per 1,000 gallons, the equivalent of 5 cents per 100 cubic feet. The Water Commissioners have recommended that meters be installed to cover all unmetered municipal services, in order that municipal consumption may be definitely accounted for as far as possible.

Training Sewage Works Managers in England

THE Windermere Urban District Council, England, recently decided to send its candidate for manager of the Council's sewage disposal works to be trained in the treatment of sewage for a period of two months at least to Newcastle-under-Lyme. The Council is to pay his traveling expenses, a weekly wage of £2 7s. 6d. and £1 5s. per week to cover his board and lodging while in training;

and if he is ultimately appointed manager, £2 10s. per week and £1 5s. per week board and lodging until the Council can provide him a house at the sewage disposal works at Tower Wood. The manager of the Newcastle works is to be given the sum of 10 guineas for his services in instructing the prospective manager of the Windermere sewage disposal works in the conduct of the plant.

The Police and Public Opinion

By Bruce Smith

National Institute of Public Administration and New York Bureau of Municipal Research

THE "crime wave" which figured so prominently in the news heads of six months ago, and which for a time engaged the attention of the entire country, has now largely disappeared from the front sheets and no longer furnishes a topic for contentious discussion and debate. Public interest centered upon police activities for a few weeks, and then became focused elsewhere. Taken by and large, police departments seem to be relieved to find that the period of inquisition has at last passed, and that they may now look forward to no more serious criticism than is provided by the comic supplements and the motion pictures.

Criticism of the Police

While it may be that the mass of citizens are somewhat predisposed to criticize and condemn the police, this critical attitude is more easily aroused than maintained. This is unfortunate, because it is far more desirable that the police should be attacked—no matter how unfairly—than that they should be forgotten altogether. It must have been some such thought that actuated Superintendent Fitzmorris to plead for citizen interest in the Chicago Police Department, even though it were "a critical and a suspicious interest."

Let us examine the effects of popular apathy and popular criticism in order to determine which of these, *from the standpoint of the police administrator*, is most to be desired. To do so, it is only necessary to go back, say, to 1917, when the march of world events became so engrossing as to crowd every other question out of the pub-

lic consciousness. In common with other every-day domestic matters, the police departments of the country lost what little hold upon public interest and attention they had previously enjoyed. They lost public attention in spite of the fact that the war emergency had created novel and difficult problems for them to contend with. With the return to a peace-time basis the so-called "crime wave" put in its appearance and carried all before it. Public interest in the police departments revived, and with a vengeance. The law-enforcing agencies of the country found themselves unprepared to meet the situation with which they were suddenly confronted.



A WINTER COVER OF "MAIN 13,"
THE ORGAN OF THE CHICAGO POLICE
DEPARTMENT

On account of the new telephone number of the Department the February issue announces a probable change of title to "Police 1313"

The Changing Crime Problem

Briefly stated, that situation was as follows: Beginning in 1913, the automobile industry had made astonishing progress, annual production increasing over 200 per cent by 1916, and reaching a peak in 1920. The results are generally known and understood, and, indeed, constitute the merest commonplace. With the almost universal use of the

automobile, the street traffic problem became so acute as severely to tax the ingenuity and resources of police departments in both large and relatively small communities. Demands for traffic officers became increasingly heavy. In most instances these demands could be satisfied only by transfers from patrol duty. Thus it came about that the patrol force was reduced to a point where it was inadequate for the effective protection of life and property, even under the old and familiar conditions.

But the crime problem itself had also changed, and changed in such a manner as to render obsolete tried and tested police methods, some of which had withstood the changing needs of generations. And here again, it was the automobile which crashed into and mowed down established police practises, and again we find the year 1913 marking a definite turning-point in the history of police development. It was in this year that the gambler, Herman Rosenthal, was shot and killed by hired assassins as he left a hotel in the heart of the Manhattan theater district during one of that section's busiest hours. The case secured nation-wide attention at the time and will be remembered now chiefly because it introduced to the general public the now familiar gunman and also because of the prominent part played by the gray murder car in which the murderers escaped from the scene of the crime.

It came as a distinct shock to many that the automobile, previously considered as being merely a pleasure vehicle, should be employed also as the "get-away" of criminals. Yet that outstanding example has been so widely and effectively imitated—and even improved upon—in a few short years, as to render foot patrol in cases requiring immediate response and action as obsolete as the watchman's rattle generally used by the night-watch policeman of two hundred and fifty years ago.

Here and there were police administrators quick to appreciate the handicap under which they now found themselves operating. In a few instances they were able to secure at least a part of the motor equipment which had become so necessary, but in too many instances their requests were greeted with a chorus of disapproval from press and public, together with caustic allusions to "joy-riding cops." Even within the last two years, the efforts of the

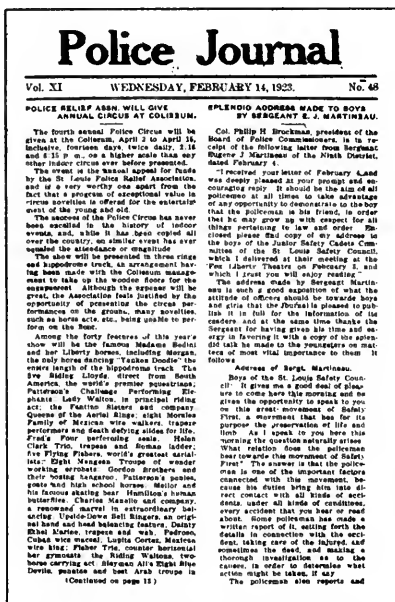
Police Commissioner of New York to stem the rising tide of crime which threatened to engulf the city, by consolidating precinct stations and providing motor patrol for certain sections, were strenuously opposed by the very newspapers which had been most insistent upon vigorous police action. But in spite of the obvious unfairness of their attitude, it is to be noted that the insistent criticism of a certain section of the metropolitan press gave extensive publicity to the police program, and probably aided in securing the support of the policy-forming branches of the city administration for new police equipment.

As a means of meeting the need for more extensive public interest in police methods, it has been suggested from one source that an official press agent be retained for police departments, who would hold daily interviews with the newspaper men covering police headquarters. The natural distrust with which such a scheme would generally be viewed provides the chief argument against its use.

It has been the present writer's observation that citizens' committees and crime commissions have been very effective in at least three cities in supporting the extension and improvement program of the police department. It must be conceded, however, that in most cases the civic bodies' method of approaching police

headquarters is not such as to inspire trust and confidence in police circles. Police administrators, on the other hand, are quite generally subject to the charge that they have not met citizens' committees half-way.

There is also some evidence to support the belief that police department publications, such as *Main 13* of Chicago, and *The Police Journal* of St. Louis, have served to quicken citizen interest and improve the popular understanding of police problems.



FRONT PAGE OF ST. LOUIS POLICE JOURNAL

Finally, there may be mentioned the plan recently devised by Commissioner Enright of New York. In an effort to establish a closer relationship between his department and the people of the city, the Commissioner has organized "a tribunal to be known as the 'Police Efficiency Forum,' to be held (monthly) at police headquarters, where any citizen may appear" and be heard orally respecting suggestions or recommendations tending to increase the efficiency of the Police Department. Complaints against members of the department will not be taken up in the Forum, but will follow the usual course. Not only does this scheme provide a new point of contact for police officials and the public, but it gives the Police Department an opportunity to present its needs and its problems to a group of interested citizens, and, above all, it makes "news" of the *reasons* underlying the police program.

The order establishing the Forum has only recently been promulgated, and it is therefore too early to judge of its effect. It is probable, however, that circumstances peculiar to a great center like New York will deprive it of some of the success which might readily be secured in a smaller city. As a most recent device for enabling the police and the public to see "eye-to-eye," it deserves the continuing attention and interest of police administrators throughout the country.

There are so many police problems which clamor for early recognition and solution that one naturally hesitates to evaluate them and to present one or two as being of great urgency and of more importance than all the others. But it may be confidently stated that until the exceedingly delicate relation of police to public has been adjusted, the development of police forces to meet changing conditions will be retarded.

A Demonstration in Methods of Preventing Delinquency

A FIVE-YEAR Program to demonstrate methods of undermining causes of delinquency was recently inaugurated by the Commonwealth Fund. It is becoming increasingly apparent that delinquency in later years is often due to maladjustment in child life. The Program is therefore seeking to demonstrate what can be done through psychiatric clinics serving children referred from juvenile courts and other agencies, and through visiting teachers placed in public schools, to diagnose and treat children who present behavior problems. The Program consists of four sections.

One section provides for traveling psychiatric clinics maintained by an appropriation made to the National Committee for Mental Hygiene. Upon invitation and under suitable conditions, one of these clinics may be located in a community for a period of from six to twelve months, after which a permanent clinic is to be established under local auspices. The first demonstration was begun in April, 1922, in St. Louis. As a result, an ordinance was recently passed establishing a permanent clinic under the Department of Public Welfare. Meanwhile, the traveling clinic has moved on to Norfolk, Va., for a similar demonstration there. A second traveling clinic has now been organized and is at work in Dallas, Texas.

Each clinic has a staff consisting of a psychiatrist (a physician specializing in mental hygiene), a psychologist, one or more psychiatric social workers, and a secretary. Each child referred to one of these clinics is given a physical examination and psychological tests, and all the factors of his problem, including his family and environmental circumstances, are thoroughly studied, and his adjustment is skil-

fully worked out.

In addition to conducting these two traveling clinics, the National Committee for Mental Hygiene is also cooperating in the maintenance of a psychiatric clinic in Monmouth County, N. J., which has to do largely with pupils in rural schools.

Another section of the Program provides for demonstrations of visiting teacher work. Seventeen cities now have the services of such teachers made possible through the Public Education Association of New York and the affiliated National Committee on Visiting Teachers. The visiting teacher assists principals and teachers in finding out why children are educational or behavior problems and in planning ways to help them. The selection of cities for these demonstrations is dependent upon the fulfillment of certain conditions, one of which is that a portion of the salary of the visiting teacher is paid by the local community.

Still another section of the Program provides training for visiting teaching and psychiatric social work in the New York School of Social Work, where annual fellowships have been established. The School maintains the Bureau of Children's Guidance, which handles intensively problem children from a number of New York public schools, and provides the students in the New York School of Social Work with opportunities for observation and practical experience.

The fourth section of the Program is the work of the Joint Committee on Methods of Preventing Delinquency, at 50 East 42nd Street, New York City, which has been established to give unity to the effort, to conduct related studies, and to interpret through publications the work of the Program.



Bituminous Treatment for Playground Surfaces

By George E. Martin

PROPER construction for the playground area around school buildings is often a difficult problem. The ordinary soil left after the construction of the building is wet in rainy weather and very dusty in dry weather. Gravel and sand are in quite good condition in wet weather, but become very disagreeable during a long season of drouth. Untreated cinders act very similarly to sand and gravel. Hard pavements of concrete and similar material are objectionable not only because of excessive cost, but also because of the possibility of serious injury to children playing on them. The city of Milwaukee and some of the suburban towns surrounding it have solved this problem by constructing playgrounds of cinders and treating them with bituminous binder.

The first work of this sort was done around the schoolhouse in Shorewood, a suburb immediately adjacent to the city of Milwaukee. This work was done in 1918. The playground was constructed by spreading 4 inches of clean screened cinders over the surface of the subgrade. The cinders were then rolled thoroughly with a 5-ton tandem roller. One and one-half gallons of binder per square yard was then applied in three parts, using $\frac{1}{2}$ -gallon to each application. The binder was permitted to dry out between successive applications, this taking approximately 24 hours. After the last application, clean stone chips, ranging in size from $\frac{1}{4}$ -inch to $\frac{1}{2}$ -inch, were used as a covering material, and a slight sprinkling of sharp sand was placed on the top to fill up the surface

voids. The construction was then thoroughly rolled and allowed to set up for two or three weeks before being used. This playground has been in continuous use since 1918, both summer and winter, and is in good condition at present, as can be seen from the photograph. In the space directly underneath the swings there have been a few holes in the surface treatment, but these are easily repaired. It is probable that the entire playground will be given a surface treatment with a light application of binder within the next year.

The city of Milwaukee constructed a bituminous treated cinder playground at the Grand Avenue & 27th Street school in 1921. This construction was as follows:

From 6 to 8 inches of unscreened cinders was spread over the subgrade. The cinders were harrowed three times in order to get the finest cinders to the bottom and the coarser ones on the top. After harrowing, the cinders were rolled with a 12-ton, 3-wheeled roller. Tarvia B was then used in one application at the rate of $1\frac{1}{2}$ gallons per square yard. This was followed by a thin layer of $\frac{3}{4}$ -inch stone, with a second layer of $\frac{1}{4}$ -inch to $\frac{1}{2}$ -inch stone to fill up the surface voids. The cover was rolled in thoroughly with a 12-ton, 3-wheeled roller. The playground was allowed to set up for about ten days before being used. It was used constantly during the school year of 1921-22, and is now in fine condition. In a few places coal or other material has been hauled over the surface of the playground; and while this has ruffed it somewhat, the surface is unbroken.

Municipal Lawn Tennis Increasingly Popular

By Dwight F. Davis

President, United States Lawn Tennis Association

RECENT data relative to municipal tennis in a number of cities throughout the United States show that a wonderful work is being undertaken for the physical development of the youth of these cities and that tennis is one of the principal vehicles of recreation toward this end. The statistics indicate that, while rapid progress is being made in this direction, the demand for court space in most of the cities considered is still far in advance of playing space and equipment.

Some 75 cities widely separated and located in all portions of the United States report that in 375 parks or recreation centers there are a trifle more than 2,000 tennis courts at the present time. A vast majority of these courts are clay, dirt or gravel. Less than 200 of the 2,000 are concrete, asphalt, etc., and the majority of such courts are located on the Pacific Coast and far south where thunderstorms are frequent. The advantage of courts of this type is that they drain quickly after such storms and are playable within ten or fifteen minutes following the cessation of rain.

More than 50 per cent of the cities furnishing these statistics report new courts planned for 1923, and, based on their figures, the addition in round numbers will be close to 400 courts. Of the 75 cities mentioned, but 28 require a permit to play on the courts, and but 4 of them charge any fee for these permits. Of these 4 cities charging for permits, Greater New York and its boroughs supply 50 per cent.

Twenty-five of the cities furnish instructors who teach at least the rudimentary forms of stroke and methods of play to the children. All but 16 of the 75 cities supply nets with the courts free, and all but 7 provide permanent backstops. Thirty-six cities during 1922 held some form of a park championship, and the total number of players competing in such championships

was slightly in excess of 22,000. Thirty-four of the 36 cities furnished prizes; most of these were donated and took the form of ribbons, medals, a city letter somewhat on the order of a 'varsity letter, etc. Very few cities report that an entry fee was charged. In the case of Brooklyn, the 25-cent entry fee was used to purchase prizes.

Reports also show that in 42 cities where records were kept, 1,785,711 players used the courts during 1922. This of course is assumed to cover players who used the courts several times at least during the season. Some of the cities and the number of courts they reported are as follows:

| | | | |
|-----------------------|-----|------------------------|-----|
| Boston | 25 | Milwaukee | 41 |
| Brooklyn, N. Y. | 380 | Newark | 120 |
| Cincinnati | 35 | New Orleans | 34 |
| Dallas | 28 | St. Louis | 72 |
| Dayton | 38 | St. Paul | 69 |
| Denver | 32 | San Francisco | 25 |
| Detroit | 53 | Seattle | 78 |
| Fort Wayne, Ind. | 32 | Spokane | 35 |
| Kansas City | 92 | Washington, D. C. | 68 |

Of Brooklyn's 380 courts, approximately 300 are grass, these being laid out on the meadowland of the parks.

Some of the outstanding features include the loaning of balls and rackets to children who cannot afford to purchase them, by the San Francisco Park Authorities; the lighting and use of the courts until midnight at Pasadena; two indoor courts used the year round at Memphis; and a constantly increasing interest in the game, with a resultant demand for more courts. This is true of every section of the country, and the reports show that the more progressive cities are using large sums of money in an endeavor to meet these requirements.

Development of lawn tennis among the boys and girls of the nation, particularly that section of the younger generation which plays the game in the parks, municipal playgrounds and recreation fields of the larger cities, will be one of the outstanding features of the United States Lawn Tennis Association campaign in the coming season. It is the intention to work

in this direction until every city of the country shall provide facilities (such as make St. Louis, Philadelphia, Washington and Chicago outstanding centers of municipal tennis.

To further this desirable cause, the Association proposes to hold a National Championship in 1923, exclusively for park players. A handsome trophy will be awarded the winning player. The Association has also revived the National Interscholastic Championship, and with the National Boys and Junior Championships the way is open for every player, regardless of his school, club or park status, to compete for a national title, provided he has the necessary skill to qualify for the final tournaments.

It is part of the program of the Association to develop the playing skill of the boys and girls in every way possible. One portion of the educational work will be the use of slow motion pictures of some of the leading tournament players of the world. It is proposed to offer the use of the films

to all playground associations and similar organizations for use from a tennis educational standpoint rather than as an amusement feature. No charge will be made for the use of the films and no charge permitted for their exhibition without a special sanction from the Association to meet an exceptional situation. The only expense attached to the use of the film will be the express charges incurred in shipping the reels between the Association's office and the point of exhibition. Applications are now being received and the films allotted in the order of their receipt by the Executive Secretary of the U. S. L. T. A., 120 Broadway, New York City.

In the author's experience as Park Commissioner in St. Louis, it was found that wherever playgrounds were instituted, juvenile crimes and delinquencies were least and that not only the physical but the mental capacities of the boys were the best and their conceptions of good sporting ethics and right conduct the keenest.

A Stimulus to Swimming Pool Cleanliness

IN its *Weekly Health Review* for February 24, the Detroit Department of Health published a table showing the comparative cleanliness of the water in seventeen different pools for a four-months period. The report says, in part:

"This is chilly weather, and yet 15,000 Detroiters are keeping up their physical resistance by taking a swim every week.

"That the full advantages of health may be enjoyed, it is essential that the swimming pools of the city be kept clean. The Health Depart-

ment takes frequent samples of the water for bacterial analysis by which the cleanliness of the water may be judged. The order is determined by averaging the relative position of each pool in the two measures, viz., (1) total bacterial count, and (2) colon count (a more specific index of pollution).

"The bacterial content of the pool is dependent on the number of bathers, their cleanliness, the equipment for cleaning and sterilizing the water, and the care given the operation of this equipment. Much improvement could be effected in the last eight pools in the table with closer attention to these details."

Campaigns to Reduce Automobile Accidents

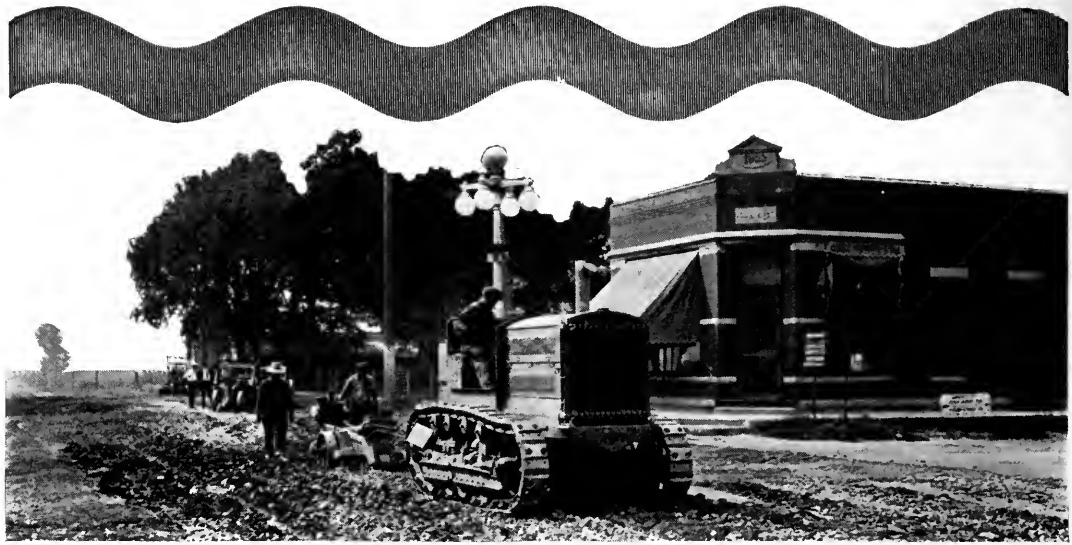
AN anti-auto accident campaign, directed against reckless drivers and careless pedestrians, has been initiated in 50 cities, according to announcement by the National Safety Council, of Chicago.

Cities in which civic, municipal and business interests are being organized through local safety councils to curb carelessness in the streets are:

Boston, Mass., Bridgeport, Conn., Buffalo, N. Y., Chicago, Ill., Cleveland, Ohio, Dallas, Texas, Wilmington, Del., Detroit, Mich., Oakland, Calif., East St. Louis, Ill., Erie, Pa., Everett, Wash., Flint, Mich., Grand Rapids, Mich., Spokane, Wash., Kansas City, Mo., Allentown, Pa., Bethlehem, Pa., Louisville, Ky., Milwaukee, Wis., New Bedford, Mass., Portland, Ore., Pawtucket, R. I., Philadelphia, Pa., Providence, R. I., Rochester, N. Y., St. Louis, Mo., St. Paul, Minn., Seattle, Wash., Sioux City, Ia., South Bend, Ind., Springfield, Ohio, Granite City, Ill., Waterbury,

Conn., Worcester, Mass., Pittsburgh, Pa., Washington, D. C., Butte, Mont., Columbus, Ohio, Toledo, Ohio, New Haven, Conn., Baltimore, Md., Trenton, N. J., Albany, N. Y., Des Moines, Ia., Minneapolis, Minn., Richmond, Va., Denver, Colo., Cincinnati, Ohio, and Springfield, Mass.

Safe drivers schools and clubs, public school safety patrols for motorists and pedestrians, traffic regulations, enforcement of penalties against reckless drivers, and vigilante traffic squads are among the measures adopted in the various cities to protect citizens on the streets. Vigilante traffic squads composed of business men organized under police direction are now functioning in many cities, among them Louisville, Ky., Grand Rapids, Mich., Allentown, Pa., Kansas City, Mo., Portland, Ore., Bridgeport, Conn.



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greatest oil, lumber and mining companies, the most experienced engineers, contractors, road builders, public officials, farmers and ranch owners, in over 75 different countries, look to Holt to supply the most effective means of doing tasks too difficult and too important to entrust to any method or machine but the "Caterpillar."* This world-wide demand has made the Holt Company what it is today, built the great Holt factories, girded the world with Holt service stations. It has made "Caterpillar"* a synonym in every tongue for *power, traction and economy*. Write for our booklet, "Caterpillar"* Performance.

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The City's Legal Rights and Duties

Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Validity of State Aid to Municipal Coast Improvements

The Texas Legislature passed a law in 1920 "to aid the city of Aransas Pass in constructing and maintaining sea-walls, breakwaters and shore protections in order to protect said city from calamitous overflows, by donating to it eight-ninths of ad valorem taxes collected on property and from persons in San Patricio County [county in which the city is situated] for a period of twenty years." The act authorized issuance of bonds to supplement this state aid. The validity of this law was lately challenged in a mandamus proceeding brought by the city against the Attorney General, but it was upheld in an opinion handed down by the Texas Supreme Court January 24, 1923.

The opinion holds that the law does not unconstitutionally amount to a grant of public money or state credit to a municipal corporation, and that it does not impinge upon the local constitutional prohibition against appropriations for more than two years. In the course of its opinion the Court said:

"The people of the state at large have a direct and vital interest in protecting the coast cities from the perils of violent storms. The destruction of ports, through which moves the commerce of the state, is a state-wide calamity. Hence, sea-walls and breakwaters of the Gulf coast, though of special benefit to particular communities, must be regarded as promoting the general welfare and prosperity of the state."

Validity of Bonds Given by Municipal Officers and Employees

Concerning the validity of bonds given by municipal officials and employees, not strictly conditioned according to the law or ordinance under which they are executed, the Kentucky Court of Appeals says in the case of *Sauer vs. Fidelity & Deposit Co. of Maryland*, 234 Southwestern Reporter, 434:

"Neither the principal nor the surety can complain of the omission from the bond of the covenant that the principal will pay over all moneys that may come to his hands to the persons to whom same belong, as they cannot be heard to complain that the obligations of the bond are less than prescribed by the statute. The great weight of common-law authority is to the effect that a statutory or official bond is not void because it contains a covenant or condition which is not prescribed by the statute, although the statute in pursuance of which it is executed prescribed its terms and conditions, unless the statute expressly provides that it shall be void on that account. The general rule is that, unless the statute expressly provides, only those parts of the bond which are contrary to the provisions of the statute are void, and the rest of the conditions will stand and be enforceable."

Invalidity of Purchase Contracts in Which Councilmen Are Adversely Interested

A city charter providing that members of the council shall not be interested in any contract with the city, invalidates purchases of coal by the city, where, at the time the contract was made and the coal furnished, a paid employee of the coal company was a member of the city council, though, on account of war conditions, the city was unable to obtain coal elsewhere. (*Kentucky Court of Appeals, Byrne & Speed Coal Co. vs. City of Louisville*, 224 Southwestern Reporter, 883.)

Municipal Improvements May Contemplate Future Necessities

Observations by the Wisconsin Supreme Court, although applied specifically to the powers of a metropolitan sewerage commission acting under statutory authority in providing for disposal of sewage of a district comprising both the territory of the city of Milwaukee and adjacent territory, seem to apply broadly to all public improvements opposed on the ground of lack of individual benefits in some instances to taxed property. (*Thielen vs. Metropolitan*



Windrows of scarified macadam and dirt are loaded with a Barber-Greene in Nashville, Tenn.



A Barber-Greene loading snow

Revolutionizing city paving methods

How the Barber-Greene Loader keeps down labor costs in summer—and replaces 60 snow shovelers in winter

LAST YEAR Nashville, Tennessee, removed the macadam from a certain street, and graded down the road bed an average of twelve inches in order to lay concrete pavement.

The scarified macadam and earth were plowed into windrows and a Barber-Greene Loader was put to work loading them into trucks.

In one day the Loader cleaned up 1,455 square yards of road by loading 485 cubic yards of material.

The average was 250 cubic yds. per day counting in the stops due to bad weather and the like.

The superintendent of the job writes: "We are revolutionizing city paving methods here by the use of this Loader. We have revamped our old ideas about the proper co-ordination of scarifier, scraper and trucks, and now we are the envy of contractors who have come to inspect our work."

The same Barber-Greene is also used to load gravel directly from the bank to trucks and on

this work cut the overhead per yard 66%—and saved 25 shovelers.

With the present scarcity and high cost of common labor, savings like these appeal strongly to municipalities in all parts of the country.

Many already have Barber-Greenes and others are purchasing their first one this year.

The Barber-Greene Bucket Loader can be furnished with a removable boom so that it can be converted into a Barber-Greene Snow Loader in the winter.

Albany says that the Barber-Greene is over thirty times as fast as hand labor in loading snow; Chicago says that it replaces sixty shovelers; Boston L officials say that counting the saving in truck time, the Barber-Greene is equivalent to a crew of one hundred and fifty men.

Send for detailed specifications, catalog and performance records of this combination Loader for handling sand, gravel, stone, scarified macadam, and snow.

BARBER-GREENE COMPANY—Representatives in 33 Cities—515 W. Park Avenue, Aurora, Illinois

BARBER  **GREENE**
 Portable Belt Conveyors Automatic Discharge of the B-G Loader Self Feeding Bucket Loaders

Sewerage Commission, 189 Northwestern Reporter, 484.)

A lower court found from evidence offered that a portion of the sewerage district territory consists largely of farming communities with no large factories, and that there was no present need of intercepting sewers. It was therefore argued, in opposition to the improvement, that no benefit would accrue to such property, and hence there could be no valid taxation of the property of the improvement. But the Supreme Court said:

"We do not think the conclusion reached by counsel necessarily follows from the facts stated in the finding. It is conceded that the territory in question is suburban in character. The Court found that the metropolitan sewerage commission considered the past, present, and prospective future growth and development of the cities, villages, and industries in the sewerage district and considered the necessity of planning and constructing a system of intercepting sewers which would be reasonably sufficient in size and capacity to care for and handle the prospective needs of the district, and that in so doing the commission exercised their best judgment and acted in good faith. How can it be said that no benefit accrued to the property owners in the territory to be served by the proposed sewerage system? It may well be that the benefits will be more immediate and direct in some cases than in others. It is plain that to construct a system which would be sufficient to provide for present needs would be little short of folly. When the great intercepting sewers are once constructed, their capacity cannot be enlarged excepting by rebuilding them at enormous expense or paralleling them with a second system. The Legislature required that provision be made so that, as additional use develops by reason of the extension of manufacturing districts or increasing density of population, it may be provided for at a minimum of public expense. Looking at the matter in the light of experience, and taking into consideration the reasonable probabilities of the future, it must be said that the property embraced in the sewerage district receives a present benefit which fully justifies the exercise of the taxing power in this case. That matters of this kind should be dealt with in a large, comprehensive way rather than in detail and piecemeal as the imperative necessity arises seems apparent on a moment's consideration."

Cities May Alienate Property Not Needed or Used for Public Purposes

Concerning the right of a city to dispose of real estate owned by it, the Virginia Supreme Court of Appeals remarked in the recent case of *City of Williamsburg vs. Lyell*, 112 Southeastern Reporter; 666:

"Property owned by a city for governmental

purposes and appropriated for the public use is impressed with a trust and cannot be disposed of, except by valid legislative authority. As a general rule, however, a municipal corporation, unless restricted by its charter, or by statute, has the power not only to acquire property, real and personal, but, where not appropriated for the public use, may alienate the same just as other corporations or individuals might do.

"Where property is acquired or held for a special purpose, as soon as that purpose is served, and the corporation has no further use for the property, it may be converted to another use, or disposed of by the municipality. *Newell v. Hancock*, 67 N. H. 244, 35 Atl. 253.

"The city of Ft. Wayne, Ind., purchased a tract of land for a park, but, before it was actually dedicated to the public, conveyed part of it to a railroad company for a yard and shops. The Court in passing upon the validity of the deed upheld it on the ground that the property, although purchased for a public common, had not yet been dedicated. *Ft. Wayne v. Lake Shore & Mich. Southern R. Co.*, 132 Ind. 558, 32 N. E. 215, 18 L. R. A. 367, 32 Am. St. Rep. 277."

Right to Abolish Municipal Office Before Incumbent's Term Expires Is Recognized

As an incident in altering a city's form of government, a state legislature may, subject to constitutional limitations, abolish old offices, holds the Florida Supreme Court in the case of *City of Jacksonville vs. Smoot*, 92 Southern Reporter, 617. In passing, the Court notes that "even when an officer, by reason of having been appointed for a definite term or by special statutory provision, cannot be lawfully removed except for cause after a full hearing, his office may be summarily abolished when the proper municipal authorities deem it advisable."

So, it was decided that on the Legislature's providing for the government of the city of Jacksonville under the commission form, with power vested in the commissioners to distribute the powers previously exercised by the commissioner of public works among such officers, department heads, clerks, etc., as the commissioners might deem necessary, the office of commissioner of public works was abolished, terminating the incumbent's right to further salary, despite the fact that the year for which he had been appointed was unexpired.

Cities Have Power to Establish Hospitals Under a General Welfare Clause in Their Charters

Upholding the right of defendant city to establish and maintain a hospital under the

Setting new records in handling material

In Toledo at the Sam Davis coal yard, 6700 pounds of coal were removed from a railroad car to a waiting motor truck in exactly 4 minutes flat.

In Lorain, at the power plant of the Ohio Public Service Company, the Truckrane loaded cinders from a stock pile into a five-ton truck, filling the truck to overflowing in 4 minutes, 15 seconds; and it was a long swing from the stock pile to the truck, too.

Truckrane is a portable crane which you can mount on any motor

truck chassis of 5 tons capacity measuring 9 feet 6 inches or more from back of driver's seat to center of rear axle.

Owners whose work is too limited to permit using a large crane, can operate the Truckrane on a margin that will soon pay for the machine.

It is easy to buy, handy to mount and operate, economical and profitable to use. Write for details, and names of users in your locality.

THE BYERS MACHINE CO.

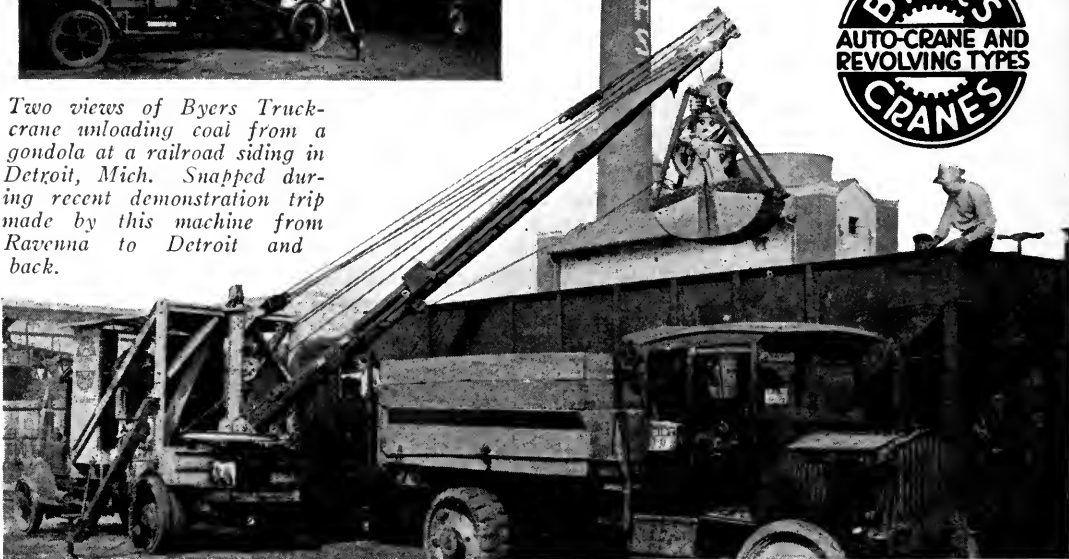
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Cranes, Buckets, Hoists, etc.

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Cities.



Two views of Byers Truck-crane unloading coal from a gondola at a railroad siding in Detroit, Mich. Snapped during recent demonstration trip made by this machine from Ravenna to Detroit and back.



TrucKranE

general welfare clause of the municipal charter, the Arkansas Supreme Court said in the recent case of Cumnock vs. City of Little Rock, 243 Southwestern Reporter, 57:

"We are also of the opinion that the power to erect a city hospital is a necessary incident of municipal life. In a growing city, a city hospital may be necessary for the preservation of the public health and the care of sick paupers. We can see no difference in principle, between the right of a city to erect and maintain a hospital and to erect and use city halls, jails, and the like. Most cities of any considerable magnitude have city hospitals subject to the regulation of its own local authorities. It is true there is express statutory authority to erect them in many of the states, but we are also of the opinion that such authority is essential to carry out the object and purposes of organizing municipal corporations."

City Not Liable for Negligence of Its Police Officers

A municipal corporation is not liable for the wrongdoing or negligence of its police

officers in the discharge of their ministerial duties. So, where a child, endeavoring to cross a street in a city, was prevented, by a long line of automobiles parked, in violation of an ordinance of the city, near the sidewalk from which the child stepped, from seeing in the middle of the street an oncoming automobile, which ran against and killed the child, the city was not liable in damages for the negligence of its chief of police, who was present and made no effort to prevent the violation of the ordinance, and who gave no warning to the child of its danger, although he saw that the child was going to try to cross the street and knew that on account of the parked automobiles it could not see the oncoming automobile that struck and killed it. (Georgia Court of Appeals, Means vs. City of Barnesville, 112 Southeastern Reporter, 739.)

On the Calendar of Conventions

MAY 10.—NEW YORK, N. Y.

National Highway Traffic Association. Annual meeting. President, Arthur H. Blanchard, Engineering Building, University of Michigan, Ann Arbor, Mich.

MAY 11-13.—WASHINGTON, D. C.

International Association of Police Women. Annual conference. Secretary, Miss Mary Fair, Director of Women's Bureau, Toledo, Ohio.

MAY 16-23.—WASHINGTON, D. C.

National Conference of Social Work. Fiftieth Anniversary Session. Secretary, William H. Parker, 25 East 9th Street, Cincinnati, Ohio.

MAY 21-23.—SAN ANGELO, TEXAS.

West Texas Chamber of Commerce. Annual Convention. General Manager, P. A. Whaley, Stamford, Texas.

MAY 21-25.—DETROIT, MICH.

American Water Works Association. Annual convention. Secretary, J. M. Diven, 153 West 71st Street, New York, N. Y.

MAY 21-25.—MEMPHIS, TENN.

Southern Commercial Secretaries' Association. Annual convention. Secretary, A. T. Felt, Alexandria, La.

MAY 24-25.—AMERICUS, GA.

Association of County Commissioners of Georgia. Annual convention. Secretary, Fred Houser, 404 Chamber of Commerce Building, Atlanta, Ga.

MAY 25-26.—MT. VERNON, OHIO

Ohio Commercial Secretaries' Association. Annual meeting. Secretary, Avery G. Clinger, Assistant Secretary, Chamber of Commerce, Columbus, Ohio.

JUNE 4-8.—NEW YORK, N. Y.

National Electric Light Association. Annual convention. Executive Manager, M. H. Aylesworth, 29 West 89th Street, New York, N. Y.

JUNE 11-12.—KILBOURN, WIS.

Wisconsin Association of Commercial Secretaries. Annual convention. Secretary, D. A. Caldwell, Chamber of Commerce, Wausau, Wis.

JUNE 11-14.—HAMILTON, ONT.

Canadian Good Roads Association. Annual convention. Secretary, George A. McNamee, 909 New Birks Building, Montreal, Que.

JUNE 11-15.—BUFFALO, N. Y.

International Association of Chiefs of Police. Annual conference. Secretary, George Black, Chief of Police, Wilmington, Del.

JUNE 12-14.—BUFFALO, N. Y.

Conference of Mayors and Other City Officials of the State of New York. Annual convention. Secretary, William P. Capes, 25 Washington Avenue, Albany, N. Y.

JUNE 18-21.—MINNEAPOLIS, MINN.

Smoke Prevention Association. Annual meeting. Secretary, Frank A. Chambers, Room 704, City Hall, Chicago, Ill.

JUNE 18-21.—WICHITA FALLS, TEXAS.

Southwest Water Works Association. Annual convention. Secretary, R. D. Morgan, Mexia, Texas.

JUNE 19-21.—MILWAUKEE, WIS.

National Association of Comptrollers and Accounting Officers. Annual convention. Secretary, Mark M. Foote, Comptroller's Office, Chicago, Ill.

JUNE 20-21.—FARIBAULT, MINN.

League of Minnesota Municipalities. Annual convention. Executive Secretary, Morris B. Lambie, The Municipal Reference Bureau, University of Minnesota, Minneapolis, Minn.

JUNE 20-22.—BRIDGEPORT, CONN.

New England Association of Fire Chiefs. Annual convention. Secretary, John W. O'Hearn, Fire Chief, Watertown, Mass.

SEPTEMBER 13-21.—BURLINGTON, VT.

The New England Water Works Association. Annual convention. Secretary, Frank J. Gifford, 715 Tremont Temple, Boston, Mass.

OCTOBER 8-13.—BOSTON, MASS.

American Public Health Association. Annual meeting. Secretary, A. W. Hedrich, 370 Seventh Avenue, New York, N. Y.

OCTOBER 23-26.—RICHMOND, VA.

International Association of Fire Engineers. Annual convention. Secretary, James J. Mulcahey, City Hall, Yonkers, N. Y.

OCTOBER 29-31.—CINCINNATI, OHIO.

National Association of Commercial Organization Secretaries. Annual meeting. Secretary-Treasurer, Joseph F. Leopold, 301 Crocker Building, Des Moines, Iowa.

NOVEMBER 12-16.—MEMPHIS, TENN.

American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box 234, St. Petersburg, Fla.

NOVEMBER 13-15.—WASHINGTON, D. C.

City Manager's Association. Annual convention. Secretary, John G. Stutz, Lawrence, Kans.

BEST TRACTORS

"most economical"

"We have two BEST 'Thirty' TRACTORS and two of the 'Sixties.' I find the BESTS the *most economical* that I have ever used for road maintenance as well as for construction work. I use ours for all kinds of road work and am widening lots of narrow roads at a very small cost," says a user* of BEST TRACTORS.

* Name of this user will gladly be sent on request.

Investigate BEST TRACTORS among the owners in your vicinity. Write for a list of them.

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The Municipal Bond Situation

By Sanders Shanks, Jr.

Editor, *The Bond Buyer*

THE bond market is evidently not going to be as kind to municipal borrowers this year as it has been in other years. Just as the spring crop of county, city, town and other municipal bonds arrives, the market runs into a period of dullness such as has not been seen in a long time, and market prices take a turn for the worse.

April was a bad month from the standpoint of municipal borrowers. In spite of a marked decrease in the amount of new issues put on sale this year, as compared with 1922, a general reduction in selling prices was resorted to by dealers last month in an effort to stimulate the appetite of investors. But even such concessions as have been made have met with little response, with the result that the bankers who handle municipal issues have had to adopt a very cautious attitude with respect to the underwriting of any new issues.

Two important pieces of public financing scheduled for about the middle of April illustrate the point. The state of Iowa invited bids for \$22,000,000 Soldiers' Bonus $4\frac{1}{4}$ per cent serial bonds having an average maturity of about ten years. The sale was to take place on April 16. On the same day Los Angeles, Calif., was to open bids for \$4,500,000 $4\frac{1}{2}$ per cent bonds. When attention was first called to these offerings early in the month, it seemed clear that both issues would command premiums. By the time the sale date was reached, however, the market had fallen to the point where neither issue was attractive at par and, because of legal restrictions, bids below par could not be considered. These issues are both attractive, but the coupon

rate will have to be raised to effect a sale in the early future.

There has been a decided decrease in the number of issues placed on the market this year, as compared with the first four months of 1922. The total of each of the first three months of this year was noticeably smaller than each preceding month. The approximate amount of the flotations in April was \$68,000,000, while in March there were \$69,758,008 bonds sold; in February, \$77,883,068, and in January, \$98,454,989, making a total of \$314,096,065. The aggregate of the same period in 1922 was \$439,984,493. The larger issues floated during April, which were sold at prices ranging from 4.03 to 4.43 per cent, are listed in the table below:

In addition to the Iowa bonds which will have to be reoffered, Kansas has a \$25,000,000 Soldiers' Bonus issue which has received the approval of the Supreme Court and is ready for market; and Illinois, with a \$55,000,000 loan for the same purpose, may also call for bids in the near future.

Looking at the situation from the viewpoint of the municipal official, the interesting fact at this writing is that the market is readjusting to a price level of from one-quarter to three-quarters of one per cent (in net interest cost) higher than the level of the first quarter of the year. This should be carefully considered by bond-issuing authorities in order that coupon rates of interest may be fixed to meet the market rate, thus avoiding delay in effecting sales which, in many cases, might tie up a construction program and entail losses greater than the difference in the interest cost of the loan.

SOME IMPORTANT MUNICIPAL BOND ISSUES FLOATED DURING APRIL

| Amount | Place | Maturity | Rate (%) | Net Yield (%) |
|-----------|-------------------|----------|------------------------------------|---------------|
| \$840,000 | Syracuse, N. Y. | 1924-43 | 4 & $4\frac{1}{4}$ | 4.03 |
| 600,000 | Eric Co., Pa. | 1928-36 | $4\frac{1}{2}$ | 4.10 |
| 439,000 | Woodlawn, Pa. | 1929-53 | $4\frac{1}{4}$ | 4.19 |
| 1,685,000 | Newark, N. J. | 1924-52 | $4\frac{1}{2}$ | 4.30 |
| 632,000 | Newark, N. J. | 1924-63 | $4\frac{1}{2}$ | 4.28 |
| 450,000 | Hagerstown, Md. | 1964-86 | $4\frac{1}{2}$ | 4.33 |
| 1,065,000 | Fall River, Mass. | 1924-53 | 4, $4\frac{1}{4}$ & $4\frac{3}{4}$ | 4.37 |
| 2,000,000 | Denver, Colo. | 1934-53 | $4\frac{1}{2}$ | 4.38 |
| 6,394,000 | Baltimore, Md. | 1924-57 | 4 & 5 | 4.38 |
| 1,170,000 | Toledo, Ohio | 1924-47 | $4\frac{1}{2}$ & $4\frac{3}{4}$ | 4.43 |

Cut Haulage Costs

In every department of municipal work—in handling asphalt, garbage, gravel, coal, ashes, cement, stone, —Wood-Detroit Hydraulic Hoists and Steel Bodies are cutting haulage costs.



Hydraulic Hoists and Steel Bodies

Let us send our minicipal folder illustrating bodies specially designed for the needs of city service. It's free upon request.

Wood Hydraulic Hoist & Body Co.

7924 Riopelle Street
DETROIT - MICH.



Hints, Helps and Happenings

Commission-Manager Government for New Jersey Cities

AFTER several years of effort, approval has at last been secured from the New Jersey Legislature of an optional act for the commission-manager form of government. The success of the recent effort is credited in large measure to the New Jersey League of Women Voters.

The new law is permissive for all municipalities. The governing board is designated as the "Municipal Council," and consists of three members in places of less than 25,000 inhabitants, five members in places of from 25,000 to 100,000, and seven members in places of over 100,000. The municipal council appoints the city manager (or "municipal manager," as he is designated in the act), and also an assessor, a municipal auditor, a municipal treasurer, a municipal clerk, and a municipal attorney. The councilmen hold office for four years, subject to the recall. The manager holds office "as long as he shall perform the duties of his office to the satisfaction of the municipal council."

The Decline of Typhoid Fever in the United States

AGRATIFYING record—that of 1922 regarding the typhoid fever death rate: 18 cities among the 69 of 100,000 and over with a rate of 2 or less per 100,000; 3 of these with no deaths from this disease; and 7 with a rate of from 1 to 0. In all but 5 of the 69 cities the typhoid fever death rate was less than 10. These figures are made public by the *Journal* of the American Medical Association

in its eleventh annual survey of typhoid fever in the larger cities of the United States. The second of the ten tables published by the *Journal* covers the record of 57 cities from 1910 to 1922 inclusive, and shows that with a population increased from 21,000,000 to 27,000,000 in that period, the typhoid deaths decreased from 4,114 to 851, and the typhoid death rate per 100,000 from 19.59 to 3.15. Sanitary engineers and public health officers will find these gains stimulating to continued effort along lines of work thus proved successful.

Tokyo Traffic Rules Trumpet Melodiously

The following rules of the road, said to be copied literally as posted in the Central Police Station of Tokyo, have been made public by Chief City Magistrate William McAdoo of New York:

1. At the rise of the hand policeman stop rapidly.
2. Do not pass him or otherwise disrespect him.
3. When a passenger of the foot hove in sight, tootle the horn, trumpet at him melodiously at first, but if he still obstacles your passage, tootle him with yigor and express by word of the mouth the warning "Hi, Hi."
4. Beware the wandering horse that he shall not take fright as you pass him by. Do not explode an exhaust bow at him. Go soothingly by.
5. Give big space to the festive dog that shall sport in the roadway.
6. Avoid entanglement of dog with the wheel spokes.
7. Go soothingly on the grease mud as there lurks the skid demon.
8. Press the brake of the foot as you roll round the corner to save collapse and tie-up.

The rules were brought back by the Rev. Dr. Karl Reiland, Rector of St. George's Church, New York, who has been visiting in Japan. Dr. Reiland writes to THE AMERICAN CITY:

"I have assumed that this is a translation from the Japanese made by a Japanese, but I cannot be certain. It seems to indicate faithfully the courtesy and poetic and pleasing method of expression known to be incident to the nature of the Japanese."

Tax Exemption Decision Reversed in New York State

THE Appellate Division of the New York Supreme Court has reversed the ruling of Justice Tierney, who, as reported in the April number of THE AMERICAN CITY, had declared unconstitutional the state law allowing temporary tax exemption of new dwellings. On the strength of this decision upholding the constitutionality of tax exemption for emergency housing, the New York Legislature has extended to April 1, 1924, the period in which new buildings may be started and exempted from local taxes.

Motor Vehicle Taxation

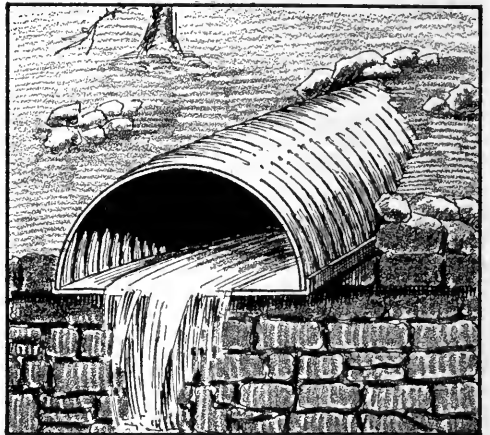
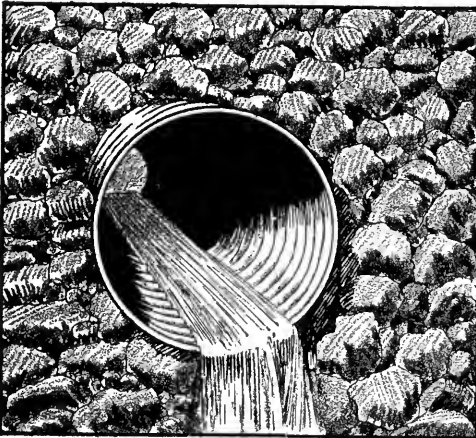
LIMITATION of taxation on automobiles to the amounts necessary for the maintenance of improved highways and the administration of state motor vehicle departments, with the state as the sole taxing agency, are advocated in the report of the Motor Vehicle Conference Committee, on which are represented the American Automobile Association, the Motor and Accessory Manufacturers Association, the National Automobile Chamber

GENUINE OPEN-HEARTH IRON

RUST-RESISTING

CULVERTS

The high quality of the material used and the adaptability of Newport round and half-round types of corrugated culvert pipe, to the needs of the road builders, make NEWPORT GENUINE OPEN-HEARTH IRON corrugated metal culverts the standard for road work everywhere. The iron has had the impurities eliminated to an extent not usually reached in any other grade of pure iron. This makes the culverts rust-resisting and the corrugations give them strength, thus assuring the road master or engineer that he is buying a high-grade culvert.



Newport culvert pipes of round, riveted, full-circle construction, are the strongest corrugated metal culverts manufactured. They are easily installed and last a lifetime. The half-round flat-bottom culvert pipe is particularly adapted to city use. It is made in 2-foot lengths so that whenever a pipe becomes clogged it is easy to dig down and lift the section immediately above where the clogged condition exists, clean out and replace it with no necessity of interfering with traffic or the expense of digging up the whole pipe.

NEWPORT CULVERT CO.

542 West Tenth St.,

Newport, Kentucky

of Commerce, the National Automobile Dealers Association, and the Rubber Association of America. Representatives of these five great national organizations, after a careful study of the taxing situation in all parts of the United States, declare that federal, state, and municipal lawmakers and governing bodies are turning to motor vehicle manufacture, sale and use as fertile fields for raising a big share of the annual revenues needed to finance governmental activities, and in doing this are placing special taxes on the automobile, which are rarely based upon sound theories of economics or equity.

The Committee, in discussing gasoline taxes, declares that gasoline consumption is a fairly accurate and practicable measure of highway use and that a tax upon this fuel constitutes a fair method of taxation, provided it is not imposed as a super-tax on all the other taxes that the motorist is now required to pay. It is pointed out that its extension should be opposed unless the annual proceeds as a single tax, or in conjunction with other taxes, are made to conform to the amount which properly and equitably should be levied upon the motor vehicle.

The main consideration, the Committee report concludes, is that, irrespective of the particular form of special taxation any state may adopt, the all-important thing is that the aggregate amount of these special taxes upon motor vehicles in any one year shall not be more than is necessary to maintain the improved highways of the state.

Flowers for the Sick and the Poor

SUBURBANITES on the lines entering the Grand Central and Pennsylvania stations in New York will have a daily opportunity this summer to share their flowers with the city's sick and poor. The National Plant, Fruit & Flower Guild, of 70 Fifth Avenue, New York, in cooperation with the United Neighborhood Houses, has announced that beginning May 1 booths will be opened in both terminals at which flowers may be left for distribution to the less fortunate dwellers in the crowded districts.

THE AMERICAN CITY will be glad to hear of similar opportunities afforded by civic or philanthropic agencies in other cities for the distribution of the products of garden and field to the flowerless sections of our large cities.

Is any organization in your city performing this fine service?

Memorial Day Not the Time to Plant Trees

THE AMERICAN LEGION WEEKLY has been doing a good service in calling attention of the Legion posts to the fact that Memorial Day is the time to dedicate rather than to plant memorial trees. For most sections of the United States May 30 is too late in the spring to plant trees. If the trees have not already been planted, it would be much wiser to postpone the planting until the fall, and dedicate the trees with fitting ceremonies on Memorial Day of 1924.

Where trees have already been planted, good citizenship requires that they be given proper care. To emphasize this need, the *Weekly* publishes the following letter from an anonymous Legionnaire in Grand Rapids, Mich.:

"While you're talking about memorial trees in the *Weekly*, why don't you warn the gang against letting memorial trees die after they've been planted? I know a town where a whole row of memorial shade trees has been allowed to die. It would have been far better for that town if the trees had never been planted. Proper care would have prevented the death of

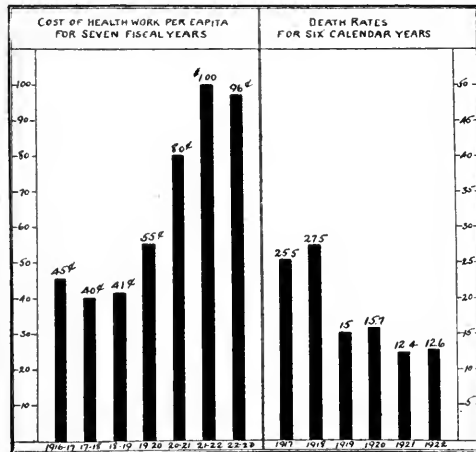
nine-tenths of the trees, I am sure."

For Clean Outdoor Amusements

THE much-needed agitation against objectionable outdoor shows has at last begun to bear fruit. At the suggestion of ten showmen there has been organized the Showmen's Legislative Committee of America, with executive office at 155 North Clark Street, Chicago. A letter from the committee on March 28 states that Attorney Thomas J. Johnson of Chicago has been chosen General Counsel and Dictator; that "Mr. Johnson's prosecution of the undesirable elements and features in the outdoor show world will be relentless"; and "from his decision there will be no appeal."

Two Women City Managers

THAT the men are not to have a monopoly of managing municipal affairs in the smaller cities is evident from the recent appointment of two women as city managers—Mrs. Bertha Heidenfelder in Collinsville, Okla., and Mrs. R. E. Barrett in Warrenton, Ore.



As the amount of money invested in health work has increased the death rates have decreased—a well known health authority says "public health is purchasable."

A CHART WHICH TELLS AN INSPIRING STORY
From the last annual report of the Department of Health, Winston-Salem, N. C.



*Batavia Road, Hamilton County, Ohio,
"Tarvia-X" penetration in 1914. Two
treatments with "Tarvia-B" practically
only maintenance in 9 years.*



*Tarvia Maintenance Truck
spreading "Tarvia-B"*

Economical Construction and Economical Maintenance

What every Taxpayer desires is the *most miles* of good roads possible with the available road funds. That means economical construction *plus* economical maintenance. It means not only roads that can be built at moderate cost but roads that can be kept in good condition at small expense.

Tarvia Roads squarely meet both of these requirements.

For Tarvia Roads cost only a little more to build than plain, waterbound macadam. And with inexpensive Tarvia maintenance there is practically no limit to their life. Smooth, dustless and mudless all the year 'round, Tarvia Roads are actually improved by time and traffic. In addition to these

facts the granular surface of a properly constructed and properly maintained Tarvia Road prevents skidding.

Batavia Road, Hamilton County, Ohio, shown above, is a typical example of Tarvia good-road economy. Since its construction in 1914, this road has stood up under a heavy volume of traffic. The only upkeep has been two inexpensive surface treatments with "Tarvia-B"—one in 1918; the other in 1921. Today the road is in perfect condition.

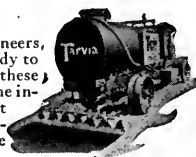
There is a grade of Tarvia for every road purpose—as a binder in new road construction; for maintaining gravel and macadam roads; for re-surfacing, patching and repairing improved roads of all types.

Tarvia

*For Road Construction
Repair and Maintenance*

Special Service Department

This company has a corps of trained engineers, and chemists who have given years of study to modern road problems. The advice of these men may be had for the asking by anyone interested. If you will write our nearest office regarding road problems and conditions in your vicinity, the matter will be given prompt attention.



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| New York | Chicago | Philadelphia | Boston | The <i>Barrett</i> Company | St. Louis | Cleveland | Cincinnati | Pittsburgh |
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THE BARRETT COMPANY, Limited: Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S.

What Southern City Wants a Child Health Demonstration

MUNICIPALITIES of less than 30,000 population and rural districts south of the Mason-Dixon line and east of the Mississippi are eligible for the second of the three child health demonstrations which are to be financed in different parts of the United States by the Commonwealth Fund.

The general purpose of these demonstrations is to aid the communities chosen in their efforts to save the lives of mothers and babies, and to help their boys and girls develop into strong, sturdy citizens, with a wholesome outlook on life. Each demonstration will last for five years, during which it will concern itself with every phase of child life.

It is suggested that cities interested correspond immediately with the Child Health Demonstration Committee, 370 Seventh Avenue, New York.

Teaching Safety to Drivers

UNDER the direction of John Prince, of the Kansas City Safety Council, there is being carried on in Kansas City, Mo., a school for drivers of motor cars, the primary purpose of which is to teach safety. The attendance on the first five Monday nights during which the course will run was between 400 and 500. The school is being held in the auditorium of the Manual Training High School.

A similar school is being held for women at the Jack O' Lantern Tavern at Westport Avenue and Main Street, on Tuesday afternoons. The attendance at the first meeting was 300. The members of the class included not only those who own cars, but others who are planning to buy during the season. The schools are only a part of an educational program to induce the people to think and talk safety.

Forecast of Municipal Building Expenditures for 1923

ANATION-WIDE survey of the contemplated expenditure for public buildings by municipalities during 1923, recently conducted by S. W. Straus & Company, of New York, showed that 92 cities had planned to spend more than \$260,000,000 for schools, police, fire and various other administration buildings. More than a score of other important cities will probably add public appropriations soon, bringing the total for less than 120 cities up to approximately \$350,000,000,

and even this is likely to be increased before the year closes.

The sum reported by the 92 cities is exclusive of the amounts to be spent for buildings in various cities by the Federal Government. Among the 92 cities reporting, 51 will expend during the year more than \$1,000,000 each on public construction, and 14 will spend more than \$5,000,000 each.

Zoning for Iowa and Chicago

JUST as this issue of THE AMERICAN CITY is going to press, word is received of the adoption during April of a zoning enabling act by the State Legislature of Iowa, and of a comprehensive zoning ordinance by the City Council of Chicago, Ill.

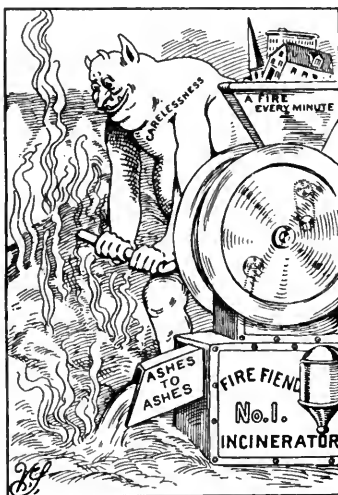
The Iowa act is an almost verbatim copy of the model act proposed by the National Advisory Committee on Zoning. The Chicago ordinance, while containing, of course, many excellent features, has been strongly criticized in some respects by the Chicago Real Estate Board, the Chicago Association of Commerce and other important civic bodies.

More extended comment on these two pieces of legislation will be published in our June number.

A City-Planning Prize Offer

APRIZE of \$250 has been offered by Frank B. Williams of New York City to students of Harvard University for the best essay of not more than 3,500 words on the following subject. "The Laws and Regulations Relating to Platting of Land in the United States as Affecting

the Desirability of Lots for Dwelling Purposes." To the essay may be appended material such as tables, diagrams, plans, bibliography, indexes, etc., not exceeding in all 3,000 words or its equivalent in pages. Two or more competitors may collaborate, the prize to be divided among them in case they are successful. The essay should be typewritten and signed with a fictitious name, and should be accompanied by a sealed envelope containing the name and address of the competitor or competitors. They should be sent to Albert S. Bard, 25 Broad Street, New York, N. Y., so as to reach him on or before June 1, 1923. The competition is open to students in any department of the University and to men who have graduated from any department within three years. In addition to Mr. Bard, Thomas Adams and Nelson P. Lewis have consented to serve as judges of the competition.



The Daily Grind

In this startling composite portrait, used by courtesy of "Whittlings," we recognize our criminal selves

THE AMERICAN CITY



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FEW lighting standards are called on to withstand the destructive effect of engine gases. But all of them are subject to the atmospheric attacks which produce the same effect only more slowly. The installation pictured above, at Knoxville, Tenn., is a striking demonstration of the permanence of Hollowspun reinforced concrete lighting standards even under abnormally severe conditions. They have already undergone as much "punishment" as an ordinary installation would get in a good long life. More complete details of this installation are available in "Hollowspun Standard" Number 5. A copy will be sent on request.

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Cleveland Charter and P. R. Held Constitutional

CLEVELAND, OHIO.—On March 16, 1923, the Ohio State Supreme Court handed down a decision holding valid the 1921 amendment to the Cleveland city charter, commonly known as the new Cleveland charter.

The attack was based upon alleged irregularities in the submission of the charter, and upon the Hare system of proportional representation incorporated into it. The Court found that it was a regularly submitted amendment notwithstanding that it repealed all but two sections of the original charter, and substituted others. Actually, only about 35 sections were changed as to substance, about 145 being either repeated verbatim with new section numbers or being reenacted with slight editorial revisions.

The Court held that the Ohio constitution does not require the full text of a proposed amendment to be set forth upon the ballot. It held also that the Ohio con-

stitution does not require each section of a proposed amendment to be submitted separately. The proportional representation feature of the new charter had been attacked, the attack being based very largely upon the old Ohio case of *State ex rel. v. Constantine*. The decision appears to destroy the force which that case has had as an adverse precedent. The 5th and 6th paragraphs of the syllabus read:

5. The Hare system of proportional representation, providing a system of voting at municipal elections,, is valid under the Home Rule amendment of the Ohio constitution.

6. Under the Home Rule amendment to the Ohio constitution, the rule that each elector is entitled to vote for every officer whose place is to be filled, is no longer law in this state as regards elections held under the Home Rule city charters.

EMMETT L. BENNETT,
The Civic League of Cleveland.

Playground Progress in 1922

THE Year Book Number (March, 1923) of *The Playground* contains encouraging testimony to the continued growth of the public recreation movement throughout the United States. Reports of expenditures in the maintenance of playgrounds and recreation centers show a substantial increase for 1922. Four hundred and seventy-two cities expended a total of \$9,317,048.79, a gain of nearly half a million over 1921.

To secure adequate leadership has always been the chief objective of the recreation movement. The cities reporting recreation work under paid leadership were 505 in number, the playgrounds and recreation centers in these cities totalled 4,601, and the trained workers numbered 10,967. There were 2,026 workers employed the year round—an increase of 30 per cent over 1921.

Of the 505 cities sending complete reports to the Playground and Recreation Association

of America, the sources of support were:

| | |
|---|-----|
| Municipal funds | 238 |
| Private funds | 140 |
| Municipal and private funds..... | 118 |
| County funds | 7 |
| State, municipal and private funds..... | 2 |

Increasingly important features of the municipal recreation systems are public swimming pools, baths and bathing beaches. Reports for the past year show the following:

| | Cities Reporting | Total |
|-----------------------|---------------------|-------|
| Swimming pools | 180 | 465 |
| Public baths | 101 | 398 |
| Bathing beaches | 127 | 223 |

One hundred and eleven cities report 286 community buildings used exclusively for recreation purposes. Fifty-two cities state the value of their community buildings, the total being \$8,595,548.

Unsightly Political Posters Eliminated in Municipal Campaign

A MOVEMENT inaugurated by the Municipal Art Committee of the City Club of Chicago some weeks ago, and augmented by the active cooperation of thirteen other associations, against political bill-posting by candidates for public office, met with real success in the recent municipal election in that city.

There was an almost total absence of signs and posters on the fences, trolley and telephone poles and street lamps. The contrast in that regard between this spring election and

the state election last fall is proof of the power of public opinion in such matters.

The following organizations cooperated in this movement: the Rotary Club, Kiwanis Club, Chicago Woman's Club, Woman's City Club, Illinois League of Women Voters, Union League Club, Hamilton Club, Church Federation, Chicago Real Estate Board, Cook County Real Estate Board, All Chicago Council, Association of Commerce, and the Federation of Women's Clubs.

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Municipal and Civic Publications

Prices do not include postage unless so stated

The Engineering of Excavation.—By George B. Massey, Vice-President, Randolph Perkins Company. John Wiley & Sons, Inc., New York. 1923. VI + 376 pp. \$6.00.

A practical book on excavating problems and the application of machinery to them. A large portion of the text consists of original notes by the author, of information obtained first-hand in the field, and of up-to-date information on present-day excavating methods and machinery. This book is of distinct value to the contractor or government official in facilitating the choice of excavating machinery, as it is always possible by analyzing an excavation problem to ascertain what type and size of machine will do the work better and more cheaply than any other. The book is replete with figures, folding plates and tables, giving reliable information with regard to sizes and capacities of steam shovels and buckets, records of work done, the blasting of ditches, quantity and pressure of water for hydraulic excavating, cubic yards excavated per hour by hydraulic dredges, rate of stripping with various machines, data on large revolving shovels, standard shovels, small revolving shovels, dragline excavators, power excavators, dry land dredges, trench-digging machines, buckets, industrial locomotives, drilling and blasting, scows and barges, boilers, fuel, electric drive and wire rope, and the application of machinery to work.

Our Vanishing Forests.—By Arthur Newton Pack, Associate Editor "Nature Magazine." The Macmillan Company, New York. 1923. XVI + 189 pp. Illustrated. \$2.00.

For the average citizen, on whom the solution of the problem indicated by the title of the book depends. Written in popular style, and showing the enormous service rendered by our forests, and the impending catastrophe of their destruction. It emphasizes the principle of "a tree for a tree." The chapter on Town Forests illuminates a wise policy which is being adopted by some far-sighted municipalities.

County and Township Government in the United States.—By Kirk H. Porter, Ph.D., Assistant Professor of Political Science, State University of Iowa. The Macmillan Company, New York. 1922. XIII + 362 pp. \$2.25.

Light on the mysteries of county government is welcome; constructive suggestions for its reform are most desirable. This volume gives both, and does its work clearly and in a way to command interest and attention. Both for the general reader and for the classroom student, it is of value in analyzing a somewhat neglected and quite confusing subject.

Health for School Children.—U. S. Bureau of Education. 1923. 75 pp. Single copy, 10 cents; additional copies, 7 cents each.

Prepared by some of the best-known individual child health authorities in the country, as well as by representatives from 16 national organizations and government bureaus, this report discusses the fundamental principles of health education; the subject matter and methods that should be used; the physical training activities that should be included in the school health program; the details of health supervision for teachers and children; the preparation of classroom teachers for health training and instruction; the hygienic arrangement and management of the school program; essentials for healthful school buildings; and the mental health of normal children. It advocates centralization under a Director of School Health Work, thoroughly and broadly trained.

The Middle of the Road.—By Philip Gibbs, George H. Doran Company, New York. 1923. 428 pp. \$2.00.

A story of the Europe of the 1920's, written with the author's usual skill.

Stickfloss—Compositions of a Newspaper Minion.—By Irvin S. Cobb. George H. Doran Company, New York. 1923. 355 pp.

Illuminating reminiscences of the author's experiences in getting and preparing news for publication.

Insecticides and Fungicides—Spraying and Dusting Equipment.—By O. G. Anderson, Professor of Horticulture, Purdue University, and F. C. Roth, Instructor in Horticulture, Purdue University. John Wiley & Sons, Inc., New York. 1923. XVI + 349 pp. Views and diagrams. \$3.00 postpaid.

A laboratory manual with supplementary text material. The subject is treated from the standpoint of those who must use the materials and appliances described. Designed not only for college students, but for growers and extension workers, and for use in vocational schools. The portion that deals with appliances and their efficient operation is of special interest to park superintendents, nurserymen and county agents, and to manufacturers of spraying and dusting materials and equipment. Presented in simple form, with few technical terms.

Report on Refuse Collection and Disposal for the City of Boston, Mass.—By George A. Johnson, Consulting Engineer, 150 Nassau Street, New York City.

Thirty-six typewritten pages and appendix of 214 typewritten pages. This report completely covers the field of garbage, ash and refuse collection and disposal for Boston, reviewing all earlier reports on this subject and going into detail as to the Coleman contract, showing its bad features both for the contractor and for the city. It shows the fallacy of separate collection and specifically recommends combined collection and incineration for the city. The appendix includes many valuable data on mechanical analyses and collection costs.

Better Homes in America.—Better Homes in America Advisory Council. National Headquarters and Bureau of Information, "The Delineator," 223 Spring Street, New York, N. Y. 1923. 64 pp. Illustrated.

A Plan Book for Demonstration Week, June 4-10, 1923, prepared for the guidance of local committees in conducting Better Homes demonstrations in line with the national movement emphasizing the importance of the home. Giving an account of the 1922 campaign, and detailed instructions for local committee work. The valuable information about home building and owning includes an article by John M. Gries, Chief of the Division of Building and Housing, Department of Commerce, on "Choosing the Site for Your Home," one on "What to Do with the Outside of the Better Home," by Robert Lemmon, and one on "Buildings and Grounds," by John Ihlder, Manager, Civic Development Department, United States Chamber of Commerce.

The Neighborhood in Nation-Building: The Running Comment of Thirty Years at the South End House.—By Robert A. Woods. Houghton Mifflin Company, Boston. 1923. VIII + 348 pp. \$3.00.

Separate papers prepared under various circumstances, which yet trace the process of social reconstruction from the neighborhood to the city, the state, and the nation. Based on the personal experience of the author since 1891, this study of local community life has authoritative value in developing principles of wide application. Settlements are compared with other types of local centers, and the great possibilities of the future are set forth.

Citizenship: A Practical Textbook in Community Civics.—By Ella Cannon Levis, M. A., Associate Principal and Instructor in Civics in the Jacobi School, New York City. Harcourt, Brace and Company, New York. 1923. XXII + 470 pp. Many illustrations. \$1.60.

This book has grown out of the author's experience as a teacher and has been put to practical test by her in classroom work, as evidenced in the arrangement of the material with lesson plans, topics for reports and debates, questions and lists of supplementary reading. Primary emphasis is laid upon the functions of local government, and these are classified under welfare, safety, utilities, improvements, education, finance, and governmental organization. An excellent tool in building citizenship.



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Town Studies.—By Harold D. Meyer, Associate Professor of Sociology in the University of North Carolina. Bureau of Public Discussion, University Extension Division, University of North Carolina, Chapel Hill, N. C. Extension Bulletin Vol II, No. 4. October 16, 1922. 56 pp. 50 cents postpaid.

A program for women's clubs, leagues of women voters and parent-teacher associations that also offers suggestions for chambers of commerce and other civic bodies. Presenting a consistent point of view from which studies may be made and benefits derived.

The Relation of Landscape Architecture to the Public Schools.—By Charles E. Greening, consulting architect, The Greening Landscape Company. Published by The Greening Nursery Company, Monroe, Mich. 1922. 30 quarto pp. Views and diagrams. \$2.00.

An address before the National Convention of School Officials at Detroit, Mich., June, 1921, presenting the important factors in school landscape development and giving a number of distinctive views and plans of work done along this line.

Statistical Sources for Demographic Studies of Greater New York, 1920.—Published by the New York City 1920 Census Committee, Inc., Room 258, 200 Fifth Avenue, New York, N. Y. Edited by Walter Laidlaw, Executive Secretary. XVIII + 820 quarto pp. A presentation, on the basis of neighborhood populations, of the facts of the 1920 Census relative to Greater New York. Information on 1,665 tracts of over 1,000 population, with 740 items for each district. These items include such facts as growth, movement, race, sex, age, nativity, mother-tongue, literacy and disease- and death-rates, and are presented by a mapping system and in tabular form, with illuminating, human interest explanations by the Editor. Reproductions of the original statistical sheets containing the sources for these demographic studies make the greater part of the volume. "The neighborhood knowledge herewith given is a basis for 'effective social engineering for the city that should be.'" Price \$50. (Apply to publishers.)

The Face of the Earth As Seen from the Air.—By Willis T. Lee, U. S. Geological Survey. American Geographical Society, New York. 1922. XII + 110 pp. Many illustrations. \$4.00.

Showing the possibilities of using the airplane and airplane photography as a means of securing information in various fields. Containing many very fine examples of aerial photography.

The Value of Zoning to Business.—By Arthur C. Comey. A 2-page reprint from "Current Affairs" of February 12, 1923. Presenting arguments for the need of zoning in Boston, illustrated by instances of its benefits in other cities. (Apply to "Current Affairs," Boston Chamber of Commerce, Boston, Mass.)

Health Scoring of School Children.—By Taliaferro Clark, Surgeon, and Edith B. Lowry, Acting Assistant Surgeon, United States Public Health Service. A practicable plan of "follow-up" in school health work by the child. 12 pp. in "Public Health Reports" of February 16, 1923. Price 5 cents. (Apply to the Government Printing Office, Washington, D. C.)

Community Extension.—Prepared by Joseph Ernest McAfee, Community Counselor, Extension Division, Department of Public Information and Welfare, University of Oklahoma. 94 pp. "Suggestive to members of newly formed community councils, or other civic organizations aiming at comprehending under one program the multifarm and now too often unrelated activities upon whose harmony and efficiency the health and prosperity of the community depend." (Apply to the University of Oklahoma, University Hall, Norman, Okla.,)

Specifications for Petroleum Products and Methods of Testing.—Federal Specifications Board Standard Specification Number 2, revised October 31, 1922. These specifications were officially adopted on February 3, 1922, for the use of departments and independent establishments of the Government in the purchase of materials covered by them. Technical Paper 323 of the Bureau of Mines. Price 10 cents. (Apply to the Government Printing Office, Washington, D. C.)

Amsterdam—Old and New.—By Clarence S. Stein. Housing Reprints—I. A comparison of the methods adopted by Amsterdam and by New York City to meet the housing dilemma. 20 quarto pp. Illustrated. Published for the Committee on Community Planning of

the American Institute of Architects by the Journal of the American Institute of Architects, 313 East 23rd Street, New York, N. Y. (Apply to Institute.)

The Results of Physical Tests of Road-Building from 1916 to 1921 Inclusive.—Bulletin No. 1132 of the United States Department of Agriculture. March 21, 1923. 55 pp. Tables, with brief comment. Price 10 cents. (Apply to the Government Printing Office, Washington, D. C.)

The Menace of Morphine, Heroin and Cocaine.—By Montaville Flowers and H. K. Bonner. Published by the International Narcotic Education Association, Pasadena, Calif. 47 pp. The purpose of this pamphlet is to begin, in and out of schools and colleges, the systematic education of youth against the use of narcotics. Price per copy, 25 cents; 5 for \$1; 100 for \$18. All receipts will be used to print new editions. Any number of copies mailed direct to addresses furnished. (Apply to publishers.)

The Library and the Municipal Official.—By Sophia Hall. Information Report No. 29 of the Municipal Information Bureau of the University Extension Division of the University of Wisconsin. February, 1923. 11 mimeographed pp. Showing what material should be in a public library for the special service of city officials, where and how to obtain it, and how to make it of use. (Apply to the Bureau, at Madison, Wis.)

Plan of New York and Its Environs.—Report of Progress, May, 1922, February, 1923. 67 pp. Abstract of reports in the four main fields of inquiry—physical, economic and industrial, social, and legal—relative to a comprehensive regional plan of New York and its environs. The reports are the work of recognized authorities in the respective fields, and make clear the complexity of the problems and the need of region-wide cooperation. (Apply to Plan of New York and Its Environs, 130 East 22nd Street, New York, N. Y.)

Survey of City and Regional Planning in the United States, 1922, with a List of Plan Reports, 1921-1922.—By Theodora Kimball, Librarian, School of Landscape Architecture, Harvard University; Hon. Librarian, American City Planning Institute. Reprinted from "Landscape Architecture," January, 1923. 20 pp. Under the heads: Official Support; Public Understanding; Progress in Construction; Legislation; Technical Advance; Metropolitan, County and Regional Planning; Zoning; Comprehensive Plan Reports; Major Street Plans; Civic Centers; Land Subdivision and New Towns; Port Development, Railroad Terminals, and Rapid Transit; Parks and Recreation; Future Plans. (Apply to the Library of the School of Landscape Architecture, Harvard University, Cambridge, Mass.)

The Other Side of the Budget.—By Lent D. Upson, Director, Detroit Bureau of Governmental Research. 4 pp. Reprinted from "National Municipal Review," March, 1923. Showing how to make the city budget intelligible by putting it in terms of actual work done or proposed. (Apply to the "National Municipal Review," 261 Broadway, New York, N. Y.)

The Tax Rates of Illinois Cities in 1921.—Published by the University of Illinois, Urbana, Ill., as Bulletin No. 3 of the Bureau of Business Research. April 30, 1923. 16 pp. Map, diagram, tables. Comparative figures. (Apply to the publishers.)

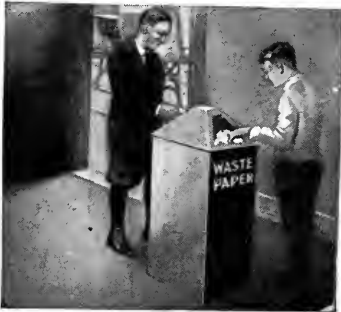
Official Directory of the City of New York, 1923.—Prepared under the direction of Peter J. Brady, Supervisor of the City Record. Compiled by William Viertel, Editor of the "City Record." Pocket size. 258 pp. Comprehensive, well-indexed information, brought up to date. Addresses and telephone numbers of officials, departments and bureaus in the city, and names and addresses of state and federal officials. An easily used compendium. Price, paper-bound, 15 cents; leather-bound, 30 cents. (Apply to the Board of City Record, Room 1812, Municipal Building, New York, N. Y.)

City Plan for East Orange, Essex County, New Jersey.—Prepared by the City Plan Commission. 1922. 80 quarto pp. Maps, plans, tables. A thorough study of every phase of the present physical conditions and the future development of this city, showing what has been accomplished since 1916 in systematic city planning for the community. The details of this progress are given in the appendix of 54 pp. (Apply to the consulting engineers, the Technical Advisory Corporation, 132 Nassau Street, New York, N. Y.)

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Metropolitan Planning and Development in Boston and Its Environs.—Prepared by the Committee on Municipal and Metropolitan Affairs and the Committee on Public Utilities of the Boston Chamber of Commerce. 32 pp. Diagrams. Showing reasons why, and recommending that, a permanent Metropolitan Planning Board should be formed to study the traffic and transportation problems of Boston and to lay out and construct roads, bridges, etc., of a metropolitan character, to aid in the handling of traffic in the district. (Apply to Thomas J. Kenny, Chairman of the Committee.)

Report of the Survey Committee Appointed by the Montclair (N. J.) Home and School Council.—Part I, Teachers' Salaries; December 1, 1922, 24 pp., diagrams; recommending a revision of the salary scale as conditions require. Part II, Administration and Costs; February 26, 1923; 51 pp., tables; giving data that are stated to prove that a reduction of the school budget would mean the lowering of the high educational standards and the varied program heretofore maintained. (Apply to Dr. W. E. Mosher, Bureau of Municipal Research, 261 Broadway, New York, N. Y.)

Business Cycles and Unemployment.—Report and Recommendations of a Committee of the President's Conference on Unemployment, with a foreword by Herbert Hoover. 1923. 30 pp. Giving ten recommendations for controlling the extreme fluctuations of the business cycle by the direct prevention of expansion or inflation and by the prevention of unemployment. Price 5 cents. (Apply to the Superintendent of Documents, Government Printing Office, Washington, D. C.)

Town-Planning in Patiala State and City.—A report to H. H. the Maharaja of Patiala, by Professor Patrick Geddes, member of Town Planning Institute. 1922. Printed in Lucknow, India. 120 large pp. Illustrated. A comprehensive and detailed study of the various features of this section—streets, parks, gardens, schools and other public buildings, industries, etc., and their possible future development. (Apply to the author as head of the Department of Civics and Sociology, University of Bombay, Bombay, India.)

Manual of Probation Work.—By Edwin J. Cooley, Chief Probation Officer, Magistrates' Courts of the City of New York. 1922. 97 pp. Containing the rules and regulations for the government of the Probation Service, and the laws relating to probation, statements of the standards for effective probation work and socialized procedure in family courts, a standard record system, and an outline of the probation organization. (Apply to William F. Delaney, Chief Clerk of the Board of City Magistrates.)

Hygeia.—A journal of individual and community health. Volume 1, Number 1. April, 1923. Published by the American Medical Association, 535 North Dearborn Street, Chicago, Ill. 76 quarto pp. Illustrated. This first number contains articles of popular interest on personal and public health, and makes a direct appeal to the common sense and the intelligence of the people. (Address the publishers.)

Burned Behind Bars.—Bulletin No. E11 of the National Fire Protection Association, 40 Central Street, Boston, Mass. 4 pp. Illustrated. Describing the fire in the Manhattan State Hospital for the Insane, on Ward's Island, New York Harbor, on February 18, 1923, and pleading for fire protection in such public institutions. \$1.50 per 100; discount for thousands. (Apply to publishers.)

Widows' Pensions.—A study of 53 fatherless families in Dallas County, Texas, who are aided by the County Commissioners Court; including the Texas Widows' Pension Law and its method of administration. Compiled and published by the Civic Federation of Dallas, 415-17 Mercantile Bank Building, Dallas, Texas. Gaynell Hawkins, Research Secretary. Field work by students of sociology, Southern Methodist University, directed by Professor Comer Woodward. 20 pp. (Apply to publishers.)

Forty-seventh Annual Report of the President, Treasurer and Attorney of the Legal Aid Society of New York City for the Year 1922.—A most interesting report of the work of this organization in rendering legal aid gratuitously to those who need it and are unable to procure it elsewhere, and in promoting measures for their protection. 98 pp. (Apply to Leonard McGee, Attorney-in-Chief, 239 Broadway, New York, N. Y.)

What People Say About School Consolidation; together with Questions We Are Asked Relating to School Consolidations.—Compiled by the Department of School Consolidation, Kansas State Normal School. 50 pp. Views and tables. Letters (1921 and 1922) from patrons of consolidated schools in Kansas. A straightforward, unpruned expression of opinion on the subject. The answers to the "Questions We Are Asked" illuminate all the points of discussion. (Apply to M. L. Smith, Director, Department of School Consolidation, Kansas State Normal School, Emporia, Kans.)

Community Planning.—By Rolland S. Wallis, Municipal Engineer, Engineering Extension Department, Iowa State College. A paper presented before the Iowa Secretarial Association at its annual winter school, held at Ames in 1922. Special Bulletin No. 12 of the Iowa Town Planning Association. February, 1923. 8 type-written pp. Explaining what community planning is, the need of it, its elements, its procedure; and summarizing the problems involved. (Apply to the Iowa Town Planning Association, Ames, Iowa.)

Child Labor in the United States.—Ten questions answered by the Children's Bureau of the U. S. Department of Labor. 31 pp. Diagrams and Tables. A definite statement of facts. (Apply to the Children's Bureau, Washington, D. C.)

Law Enforcement in the Control of Tuberculosis.—By Edgar A. Jonas, President, Board of Directors, Municipal Tuberculosis Sanitarium and First Assistant State's Attorney, Chicago, Ill. 7 pp in the Bulletin, March, 1923, of the City of Chicago Municipal Tuberculosis Sanitarium. Reprinted from the "American Journal of Public Health," February, 1923. Read before the Public Health Administration Section of the American Public Health Association, at Cleveland, October 18, 1922. (Apply to the Sanitarium.)

Rules and Regulations for the Control of Tuberculosis.—By the Illinois Department of Public Health. Rules revised and in force January 1, 1923. 10 pp. (Apply to Isaac D. Rawlings, Director of the State Department of Public Health, Springfield, Ill.)

What You Should Know About Tuberculosis.—Useful facts for the tuberculous and those living with them. Reprint of pamphlet prepared by the Canadian Association for the Prevention of Tuberculosis. Issued by the Department of Health, Canada. 1922. 16 pp. (Apply to Dr. Robert E. Wodehouse, Secretary, The Canadian Association for the Prevention of Tuberculosis, Ottawa, Ontario.)

Souvenir Program, Minneapolis Music Week, January 10-17, 1923.—34 pp. (Apply to Elsa C. Henke, Secretary, Civic Music League, 711 Lowry Avenue, N. E., Minneapolis, Minn.)

Transportation of Milk in Metal Tanks.—By Russell S. Smith, Market Milk Specialist, Dairy Division, U. S. Department of Agriculture, Washington, D. C. Reprinted from the Eleventh Annual Report of the International Association of Dairy and Milk Inspectors. 16 pp. Prepared from the writer's observation of the actual operation of metal transportation tanks mounted on railway cars, on electric cars and on motor trucks, and from the experience of transportation tank owners, without comparing the relative merits or demerits of different types of equipment. (Apply to the Department of Agriculture, Washington, D. C.)

Baltimore, Md.—Twenty-eighth Annual Report of the Free Public Bath Commission. For the year 1922. (Apply to Eugene Levering, Chairman.)

Manchester, N. H.—Second Annual Report of the Department of Highways. For the year 1922. (Apply to E. R. Conant, Surveyor.)

Oak Park, Ill.—Annual Report of the Playground Board for the year 1922. (Apply to Dudley C. Meyers, Secretary.)

Oak Park, Ill.—Twenty-first Annual Report of the Department of Public Works. For the year 1922. (Apply to Charles E. White, Jr., Commissioner.)

Palo Alto, Calif.—Annual Report of the Health Department for the year 1922. (Apply to Louis Olsen, Health Officer.)

Springfield, Mass.—Forty-ninth Annual Report of the Board of Water Commissioners. For the year 1922. (Apply to Howard M. King, Superintendent, Municipal Water Works.)

THE AMERICAN CITY



“500”---the choice of 500!

Clean streets indicate a city's “healthiness,” and the Osborn No. 500 is helping many cities keep their streets clean and push broom bills low.

Continued re-orders year after year by more than 500 cities prove the unquestioned popularity of the Osborn No. 500 push broom.

Each knot of the genuine African Bass fibre is deeply and firmly set in a clear White Elm block. The wide flare digs in close against the walls and curbs. The No. 500 will not shed.

This is only one of the many Osborn brushes and brooms for city use carried in stock for immediate delivery.

Write for Prices.

Brush Division

THE OSBORN MANUFACTURING COMPANY
INCORPORATED

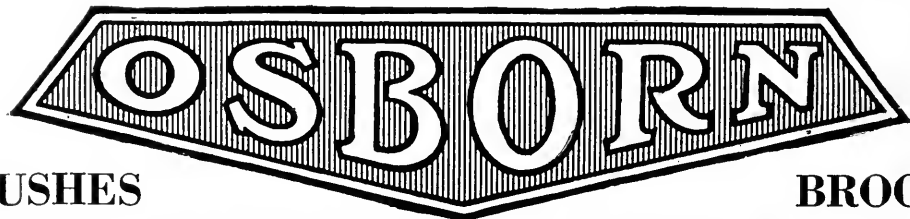
New York

Chicago

CLEVELAND

San Francisco

Detroit



BRUSHES

BROOMS

Methods, Materials and Appliances

News for City and County Engineers, City Managers, Water-Works Superintendents, City Controllers, Park Superintendents, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

A New Low-Cost Motor Pick-up Street Sweeper

The first announcement of 1923 to officials interested in cleaner streets at a lower cost comes from Foamite-Childs Corporation, Utica, N. Y., well known in the fire-fighting field. This company has announced a new pick-up sweeper with a number of points in which it claims superiority over other street-cleaning machines of the pick-up type.

The new sweeper has an automatic gutter broom that works in and out with the curb line, independent of the driver. The large rear broom is so designed that wear automatically shortens the distance between the broom and the conveyor. The broom itself stops when the shear pins break, making it impossible to foul the conveyor. The large carrying capacity of the conveyor makes it practically impossible to choke or clog it with heavy sweepings. The conveyor, which has a removable bottom that is easily replaced, feeds into a straight-side hopper without bridges or shelves to hold back the sweepings when the dump is operated. There are only six drive chains in the entire machine, including the conveyor, and all mechanical parts are accessible. Another feature is that the sweeper will operate while the machine stands still. Its normal working speed is 9 miles per hour.

The new "Childs" sweeper is of the 4-wheel type with a Reo Speedwagon power-plant, right-hand drive and self-starter. It is a strictly one-man machine, with all the levers

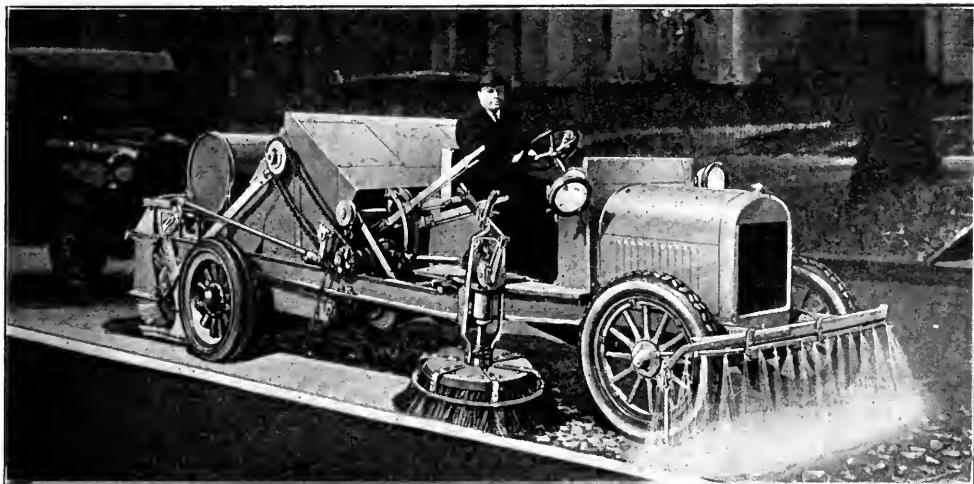
so arranged that the operator has complete and convenient control without leaving his seat. The rear axle of the Speedwagon is moved forward and converted into a jack-shaft. The service and emergency brakes mounted on the rear axle are still used as such. The large rear broom is built up on a grooved wooden core, with end castings to protect the fiber. The rear broom is filled either with steel or split bamboo, and one extra broom is furnished with each machine. The hopper or dirt receptacle has a carrying capacity of 50 cubic feet. The gutter broom has a steel fiber filling built 42 inches in diameter in six segments that are easily and quickly changed when the broom is worn out. It is operated by bevel-cut steel gears running in an oil bath on annular contact ball bearings.

The water-sprinkling system in front of the machine consists of a 150-gallon galvanized iron tank, with brass strainers at the intake and outlet, from which water runs by gravity to a rotary gear Deming brass pump that forces the water to the brass nozzles mounted under the bumper in front. The water spray is controlled by the driver. Unused water is returned to the tank by a by-pass.

Childs sweepers have already been purchased by the cities of Massena and Elmira, N. Y.

The Venturi Meter in the Filtration Plant

The accompanying diagrammatic layout of a typical rapid sand filtration plant assumes the source of raw water to be a river or lake from

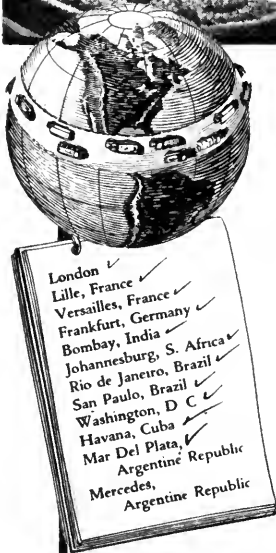


A NEW ONE-MAN PICK-UP SWEEPER WITH FLEXIBLE CURB BROOM

Around the world on native lake asphalt



La Rambla, Mar del Plata, Argentina, the "Atlantic City" of South America, paved with Trinidad (Native-lake) Asphalt in 1913. No maintenance cost to date.



THE show streets of the world—from the Thames-Victoria Embankment, London, to the driveways of La Rambla, Argentina—are built with TRINIDAD, the native-lake asphalt paving.

More than 25,000 miles of Trinidad streets and highways have been built since 1879. And millions of square yards of Trinidad paving have stood up under traffic for twenty-five years before costing a cent per square yard per year for repairs.

That's why thousands of municipalities that put long-lasting, economical service above first cost in the selection of street-building material use Trinidad Lake Asphalt EXCLUSIVELY.

Trinidad Lake Asphalt is a nature-made, age-tested bitumen. Centuries of exposure have but seasoned and toughened it—given it the ability to stand up under service on modern highways.

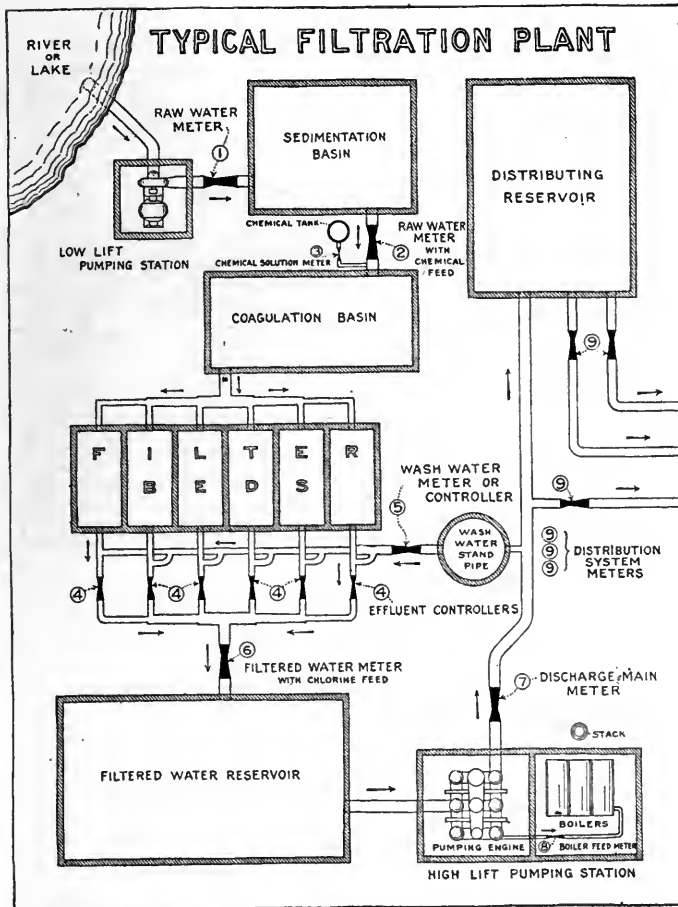
Let us send you some of the service records of this wonderful material.

New York
Chicago
Pittsburgh

THE BARBER ASPHALT
COMPANY
PHILADELPHIA

St. Louis
Kansas City

TRINIDAD LAKE ASPHALT



A DIAGRAMMATIC REPRESENTATION OF A TYPICAL FILTER PLANT, SHOWING LOCATION OF VENTURI METERS

which the supply is pumped by the low-pressure service pump, or flows by gravity to a sedimentation basin where the turbid water is partially clarified by the gradual settling of suspended matter. The Venturi meter (1) on the main supply line gives an accurate accounting of the total raw-water supply and all variations in the rate of supply. It also serves as a constant check on pump performance, giving immediate warning of broken, roughened or clogged impeller vanes, worn valves, leaky plungers or other defects in equipment or operation. Occasionally certain chemicals, such as lime or iron, are added to the water before it reaches this basin, to hasten and increase precipitation.

From the sedimentation basin the water passes through the second meter (2) to the coagulation basin. During its passage the water is chemically dosed with alum or iron, milk of lime, soda-ash, etc., for promoting filtration by the formation of floc, which is caught by the filter-bed sand. A meter at this point reveals the hourly rate of flow to the coagulation basin, and by comparing its readings with the raw-

water meter, shows the loss of water by leakage or evaporation.

From the meter readings at 1 and 2, the application of the chemicals can be properly maintained through manually regulated orifice tanks or by an automatic chemical controller operated by the meter itself.

In larger filtration plants, it is often advisable to place a meter on each feed line (3). The importance of keeping the supply of chemicals, whether manually or automatically controlled, under accurate regulation to insure proper treatment and to avoid waste, is universally recognized. The daily information furnished by the Venturi meters thus become and records of the Ven- of great value in at once revealing improper conditions of operation.

After coagulation, the water is admitted to the filters. In slow sand filtration plants, manual control of the main valve is practical. Hence a plain Venturi tube set in the effluent line from each filter and connected to a suitable loss-of-head and rate-of-flow gage forms a combination for accurate guidance in proper filter operation.

The advent of the rapid

sand filtration plant brought with it, however, an immediate demand for automatic rate control of the filter effluent. In this case the Venturi effluent controller may replace the simple meter in the effluent line for each filter (4). As the sand-bed becomes clogged, the loss of head increases and the control valve gradually enlarges its opening, until finally a wide-open position is reached.

The need of controlling the rate of wash of filters, so as to prevent an unduly high rate, with consequent loss of some of the upper sand layers, is fully recognized. Either a self-contained or a diaphragm type of Venturi controller may be placed directly in the wash line and the rate set on the scale beam, thus insuring safety in washing filters.

From the filter-beds the water is delivered to the clear-water conduit or reservoir. At this point (6) final sterilization may be necessary by the use of liquid chlorine. It is particularly essential that the rate of feed be in close proportion to the rate of filtered water to insure proper bacterial results and to avoid overdose. A Venturi meter is usually used as

MAKE BETTER ASPHALT STREET REPAIRS



The Improved Equitable Asphalt Heater Softens 1500 Square Yards a Day

Proper bonding of old and new asphalt is made possible by this fool proof machine which does not require hot water to operate. The heating hood slides on the ground saving time and heat. The machine heats 45 square feet of pavement in 1 to 2 minutes and moves quickly ahead. Send for our new prices and specifications.

THE EQUITABLE ASPHALT MAINTENANCE COMPANY
1901 Campbell Street Kansas City, Mo.

IRON FENCING

Our complete service in design, fabrication and erection is available for any city. We have given entire satisfaction for thirty-eight years. Our services and Catalog 22-C are yours on request.

ENTERPRISE IRON WORKS
1114 E-24TH STREET
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DRAKE LIGHTING STANDARDS

are installed in many progressive cities and villages. These ornamental cast iron standards are permanent, beautify your streets and raise property values.

Equipped with General Electric fixtures and globes.

Prompt Deliveries
Prices Low
Write us today

**THE DRAKE
MANUFACTURING
COMPANY**

Friendship, N. Y.

Established 1897

a controlling device for connection to the automatic chlorinating apparatus.

A high-service pumping-station is usually required to send the filtered water to a distribution reservoir, from which it flows by gravity to the city. In some localities the water is pumped directly into outgoing mains which have a common connection to a stand-pipe which "floats" on the system. One or more Venturis are needed on the discharge line (7) from the high-service pump, which may be either of the reciprocating or of the centrifugal type. Here the meter accounts for the daily output of filtered water, which can be compared with the daily input of raw water, disclosing the gradual, but none the less serious, increase of slip on the pumps, as the pump valves become worn or broken, or fail to seat properly.

A complete power-plant in connection with large filtration plants is often warranted. The power-plant may prove a source of expense rather than an economy, however, if proper instruments are not used to guide operation. It is of special importance that the performance of the boilers be constantly watched and a meter placed on the boiler-feed line which not only gives the total pounds of water evaporated but immediately points out inefficiency in feed water control, and in numerous other ways serves as a thoroughly reliable guide in the work done by each boiler up to a maximum.

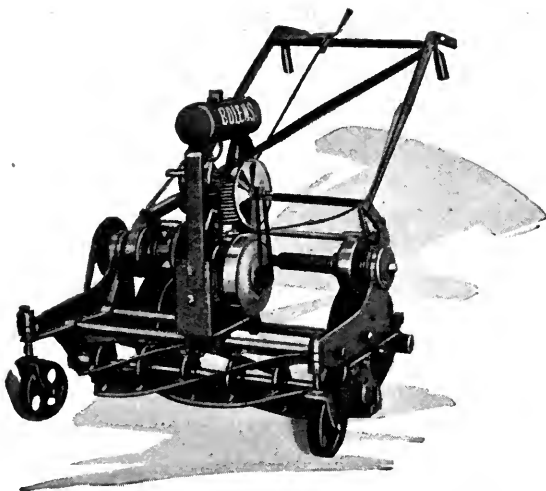
The importance of placing Venturis on all outgoing distribution lines (9) has been emphasized repeatedly, since in no other way can exact knowledge be obtained of the day and night supply and the demand of the various districts, reservoirs and stand-pipes.

The layout of a typical filtration plant is published through the courtesy of Builders Iron Foundry, Providence, R. I.

Convertible Motor Lawn-Mower and Roller

The demand on the part of park superintendents for a power-driven combined lawn-mower and roller which can be used as one or the other or both, has led to the development of the Bolens lawn-mower tractor by the Gilson Manufacturing Company, Port Washington, Wis.

This new mower is a combination of the two types. There is a flexible eight-segment roller at the back, the six inner segments of which can be removed, leaving the two outer segments as driving wheels, thus converting the machine into a simple motor mower. To remove these segments is only a matter of a few minutes through the loosening of four cap-screws. The value of rolling is at a maximum in the spring, when the soil is more or less puffed and irregular because of frost action. As soon as the dry weather sets in, a continuous rolling of the lawn becomes harmful rather than beneficial, and it is at that time that the wheel



A COMBINED MOTOR ROLLER AND MOWER
WITH SEGMENTS OF ROLLER REMOVED FOR
MIDSUMMER WORK

type of power lawn-mower is more desirable.

Another special feature of the Bolens mower is a detachable cutting unit, the cutting unit and cutter bar being an assembly that can be quickly removed by loosening four cap-screws. The machine can be turned by power by means of right- and left-hand clutch drives. There is a safety slip clutch on the reel drive to prevent damage from obstacles getting between the reel and the cutter bar. There is a center clutch by means of which the entire outfit, including the reel, can be instantly stopped. With this clutch engaged and the driving clutch released, the machine stands still, but the reel is under power.

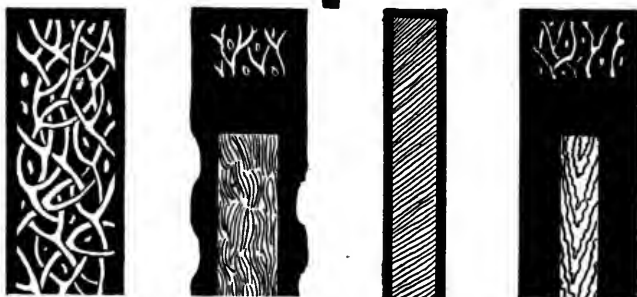
A New Type of Pump Valve

An entirely new form of pump valve has been brought out by the Worthington Pump & Machinery Corporation, New York City. This valve, when applied to service conditions that have been difficult for the older standard valves by causing cutting and leakage, is claimed to eliminate both these troubles and therefore to increase the average pump efficiency, decrease the cost of pumping, and maintain the capacity of the pump at its maximum.

After many years of building and operating pumps, Worthington engineers have found that the principal cause of leakage is traceable to the excessive wear on the rubber, which, while negligible in some cases, is often quite bad. To overcome rapid and costly wearing, cutting and cracking action, the new Worthington "Seal" valve is offered for use when the conditions are too hard for the ordinary form of valve now in standard use.

The new valve is ingenious and simple. There are no screws, no bolts, no rubber rings, no nuts, no bushings, and no rotating elements. The principal new feature that adapts this valve for hard service is the so-called "bottom plate,"

Servicised Expansion Joints



MONITORS OF THE ROAD

Old principles of expansion joint provide fillers of solid asphaltic content or impregnated fibre and asphalt in an elastic mass. ¶ The fundamental purpose of the filler is to re-occupy the space left by two contracting slabs. ¶ Solid asphaltic or impregnated fibrous materials contract, concrete slabs likewise contract on cooling. ¶ Three contracting bodies cannot occupy the same space as when expanded. Servicised joints *expand* when the concrete slabs contract. ¶ This is the key to a permanent waterproof joint; a correct answer to the problem of expansion between two contracting bodies. Unimpregnated cellular fibrous matter in Servicised Joints brings about this re-expansion after compression is relieved.

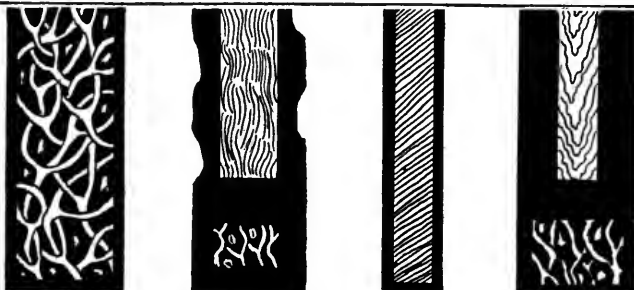
Trapped Under Compression:
The print to the right is an example of oozing under compression. Due to the hard asphalt surfacing over the concrete base, the traffic could not carry the surplus away because it was locked in between the asphalt surfacing and base. The force was great enough, however, to form bulges in the hard asphalt surface.



A Bituminous and Impregnated Fibre or Elastic Mass: No better proof of indiscriminate oozing. No better illustration of the need of expansion joint of the proper kind. The action in this instance resembles that of paste in a tube being squeezed with one side open. Action of this kind causes tremendous waste, without resulting in good Servicised Joints will prevent this.

Write Us About Your
Expansion Joint
Problems

Servicised Products Co.
First National Bank Bldg.
CHICAGO



TYPE B
75% Bitumen
25% Cellular Fibre

TYPE D
Self-Expanding
Non-Raising

TYPE C
Felt Center-Coated
Sides-Sidewalk Joint

TYPE AA
3/16 Veneer Core

Four Types of Servicised Expansion Joints



in Which the Oozing Tendency Is Controlled

Servicise the Crevice and Save the Road



PHANTOM VIEW OF SEAL VALVE

which is, in effect, a middle seat for the rubber valve proper. When the valve is closed, this middle seat carries the entire load and prevents the rubber seal from cutting on the seats or ribs. The bottom plate moves up and down with the rubber, and so not only acts as a middle seat, but is movable with the rubber, and helps to keep the rubber valve in shape, even when open. Thus, all mechanical functions requiring strength and wear resistance are cared for by metal parts; the flexible rubber acts only as a seal against leakage.

Removal of Technical Advisory Corporation Offices

The Technical Advisory Corporation has announced the removal of its offices to a larger suite in the Park Row Building, 15 Park Row, New York City. The Technical Advisory Corporation is a cooperative organization of engineers rendering advisory service and specializing in canals, harbors, highways, railways, sewers, tunnels, water-power, power development and operation, special machine design, material handling, fuel, ores, dyestuffs, explosives, research and processes, streets and paving, parks, landscape architecture, waste disposal, building and zoning ordinances, city plans, industrial investigations and reports, analyses of operation and costs, plant layout, management, public utility valuation and rate investigation, steam, gas and electricity, railway and water transportation.

Building a 200,000-Gallon Tank at Three Rivers, Mich.

At Three Rivers, Mich., the Pittsburgh Des Moines Steel Company, Pittsburgh, Pa., erected a 200,000-gallon elevated steel tank for the city. The illustration shows the tank under construction. For hoisting the 92 tons of steel used in the building of this tank, consisting of sheet steel and other fabricated parts, a Novo combination hoist and air compressor was used. The outfit consumed about 12 gallons of gasoline per 9-hour day.

The Novo AF 4-cylinder engine is the power-plant used to run a 90-foot compressor. This amount of air will drive two riveting hammers or a riveter and a calker. The hoist as used on this job held 700 feet of 5/16-inch cable and lifted a 4,000-pound basket pole, 70 feet long, with ease, as well as handling all the steel used in the work.

The tank itself is 110 feet high and has six

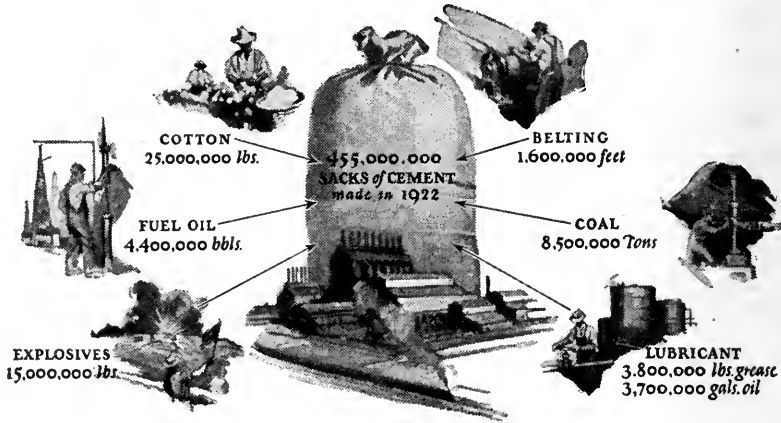


THE NEW THREE RIVERS TANK UNDER CONSTRUCTION

posts, and the base columns are 37 feet, 8 inches long, and weighs $3\frac{1}{2}$ tons each. According to W. H. Petty, in charge of construction on the job at Three Rivers, the Novo hoist and air compressor handled all of the work required of it with ease.

Large Demand for Fire Hydrants

The Waterous Fire Engine Company, St. Paul, Minn., manufacturer of the Waterous improved compression type fire hydrant of the non-jacketed type, has announced that the demand for this hydrant has necessitated putting on a night crew at the factory. This season the Waterous hydrant has been adopted for use in water-works improvements being installed at White Lake, Blunt, Vermillion, and Tulare, S. Dak.; Maurice, Van Horne, Malvern, Carson, Red Oak, Carroll, and Hull, Iowa; Bellevue, and Aurora, Nebr.; Winsted, North Branch, Morristown, Staples, St. Cloud, Springfield, Amboy, Hutchinson, Edgerton, and Alexandria, Minn.; Hillsboro, and Walhalla, N. Dak.; Milton, Wis., Hanover, Ill., and other cities.



Your Business—and Cement

WHO OPERATES a basic industry is less important than how many people benefit by it.

From the cement industry, an extraordinary number benefit.

In making the 455,000,000 sacks turned out last year, the mills used 8,500,000 tons of coal. This meant 8,500 coal miners steadily employed—their families, numbering not less than 25,000, maintained—and along with them tradesmen and other people enough to supply the needs of a town of over 50,000.

That is, of course, saying nothing of the business created for coal operators and transportation lines.

Sacks are a lesser item in the cement industry than coal,

yet 50,000,000 new sacks, representing 50,000 bales—25,000,000 pounds—of cotton, had to be bought last year. Back of this were cotton planters, plantation workers, mill owners, mill operatives and so on—thousands altogether.

And consider these other requirements of the industry last year:

4,400,000 barrels of fuel oil
3,400,000,000 cubic feet of gas
15,000,000 pounds of explosives
32,600,000 pounds of greases and oils
1,600,000 linear feet of belting
4,500,000 firebrick for relining kilns
7,000,000 pounds of paper for bags
570,000 tons of gypsum

In addition the industry bought quantities of heavy grinding and burning machinery, locomotives, cars, rails, electrical and other necessary equipment.

It's interesting, isn't it, how a single industry can spread prosperity?

PORTLAND CEMENT ASSOCIATION

*A National Organization
to Improve and Extend the Uses of Concrete*

Would you like to have a copy of our little brochure, "Fifty Years of Portland Cement in America"? If so, ask for your free copy.

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| Chicago | Helena | Minneapolis | Pittsburgh | St. Louis |
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| Denver | Kansas City | New York | Salt Lake City | Washington, D.C. |



A SPEEDY 6-CYLINDER MOTOR TRUCK WITH DUMP BODY

The length of the dump body is 7 feet, by 4 feet wide, and the height of the lower side is 12 inches and of the upper side 8 inches. It has a capacity of 28 cubic feet to the top of the lower side, and a total capacity of 42 cubic feet. The body is tapered, being 3 feet 11½ inches on the front and 4 feet 1½ inches at the rear. It is mounted 9 inches from the sill to the bottom of the body. Twelve-gage steel is used throughout, and the tail-gate is double-acting, with a special adjustable feature.

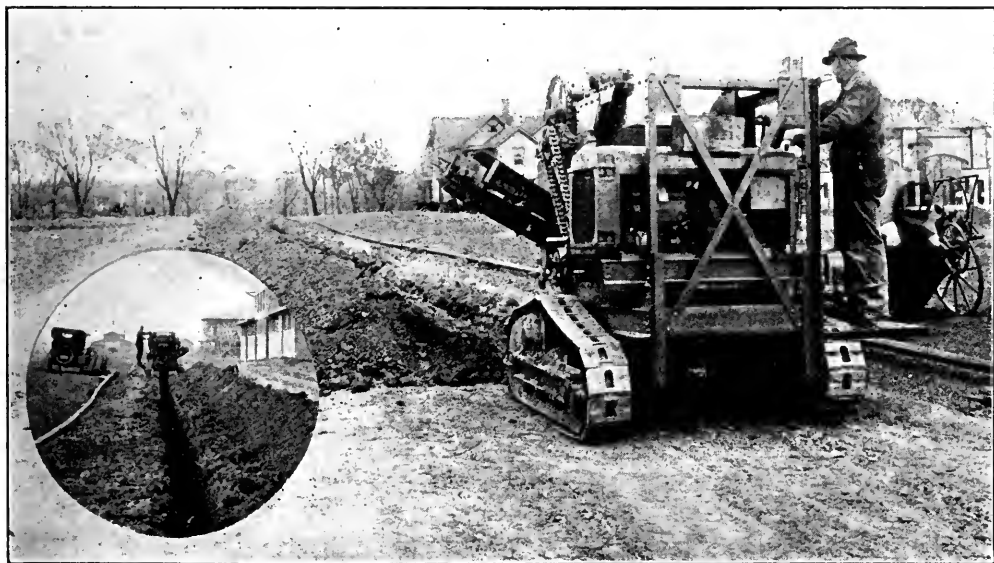
A Six-Cylinder Speed Truck with Dump-Body Equipment

The use of light, speedy motor trucks in the construction of concrete roads has been a factor in increasing the mileage of roads of this type constructed in any one season. The Avery Company, Peoria, Ill., has recently put out a 6-cylinder truck equipped with a dump body made by the Heil Company, Milwaukee, Wis., especially built for utility work, being adapted to road maintenance, general contracting and construction of all kinds. The hoist on the dump body will lift a 3,000-pound load to a 45-degree dumping angle with 15 turns of the crank by applying 30 pounds pressure to the crank. The hoist can be locked so that only part of the load need be dumped at any one time.

A Ditcher with a Vertical-Digging Boom

A vertical-digging, side-discharge type trenching machine, mounted on crawler traction with no auxiliary wheels, is a new development in ditching machines which has recently been brought out by the Barber-Greene Co., Aurora, Ill. This radically designed machine, which digs straight down and has a positive-discharge bucket, has been thoroughly tested by real work in the field for more than a year. The machine digs straight down to a depth of 5 feet and a width of either 7½ or 15 inches. The buckets are part of the chain, built to break as they pass over the head sprocket, thus insuring positive discharge of any kind of material.

During the summer of 1922, after many fac-



A FORE-AND-AFT VIEW OF THE NEW VERTICAL-DIGGING TYPE TRENCH EXCAVATOR, SHOWING TRENCH FOR PIPE IN INSET



Garford Low Cost Operation Contributes to Department Economy

In municipal service Garfords provide a sure source of saving for any department using motorized equipment. The Garford shown above is used by the Division of Electricity in Ashtabula, Ohio.

The wide range of the Garford line offers the truck of the right power and capacity for any purpose. Garford Engineers are broadly experienced in designing special equipment for any particular needs.

They are prepared to work with Department Heads, and to make sound, trustworthy recommendations as to what equipment is needed and what will insure the utmost efficiency and economy. This service is free. Ask for consultations with Garford Engineers at any time.

The Garford Motor Truck Company, Lima, Ohio

Manufacturers of Motor Trucks 1 to 7½ Tons

GARFORD

DEPENDABLE TRANSPORTATION

tory tests, the ditcher illustrated was put to work digging trenches for the gas-mains at the new grounds of the Central States Fair and Exposition near Aurora. Here it dug 2 miles of ditch for gas-mains, averaging 600 feet per day through different kinds of soil, such as black loam, gravel, yellow clay and white clay. During this digging the machine encountered construction work on foundations, which necessitated running the gas pipe around the foundations. To do this, the machine turned four successive corners, each at an angle of about 70 degrees, without removing the boom from the trench. During this time the machine was operated by only one man.

The sturdiness of the machine was well demonstrated in that only two minor repairs were necessary and the replacement of occasional breaking pins, with which the machine was provided as a safety measure to protect it when large boulders were encountered. This low repair record of a new machine was possible because it was made up almost entirely of previously tested units. The crawlers on which it was mounted are the same standard crawlers used on the Barber-Greene Model 42 loader, and the Buda engine and Cotta transmission are also the same.

After the machine had finished its work at the Fair Grounds, it was brought to Aurora and used by the Western United Gas and Electric Company to replace a labor gang in extending the gas-mains of this company on Pierce Street. Here one operator replaced a whole digging gang, doing the work of 20 men, and, it is claimed, effecting a saving of about \$75 per day.

New Union Meter Representative in New England

The Union Water Meter Company, Worcester, Mass., has announced that Guy C. Northrop has become associated with its sales department and will devote his attention to the New England territory. Guy Northrop is the son of F. L. Northrop, who represents the A. P. Smith Manufacturing Company, of East Orange, N. J., in New England, and the brother of M. L. Northrop, who is connected with the Boston office of the Warren Foundry & Pipe Company, of Phillipsburg, N. J.

A Root Cutter for Cleaning Sewers

The Victory self-propelling nozzle for sewer cleaning, described in these pages some time ago, is now being made equipped with a root cutter. The Self-Propelling Nozzle Company, Inc., 99 Water Street, New York City, claims that this self-propelling root cutter is an assurance against clogged sewers. The machine is a simple, easily-operated tool which travels from the manhole to the obstructing roots or sticks under its own power, and it is claimed that upon reaching them the revolving blade cuts away the matted mass of roots or sticks up to an inch in diameter. The water which



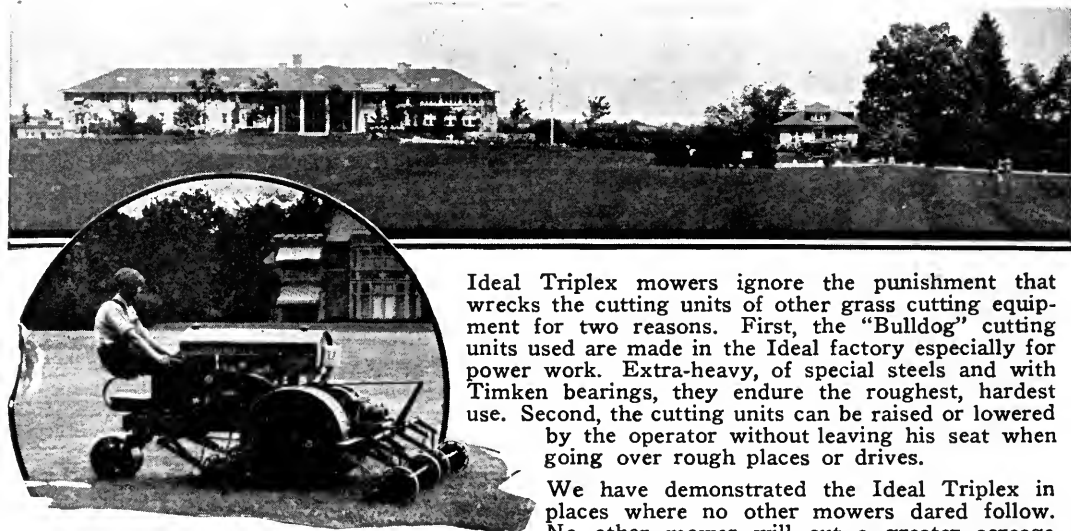
ROTATING NOZZLE WITH ROOT CUTTER
FOR SEWER WORK

revolves the root cutter washes away the loosened fibers, roots and sticks, and at the same time is claimed to give the sewer a thorough cleaning.

New National Paving Brick Officers

The National Paving Brick Manufacturers Association, Engineers Building, Cleveland, Ohio, has announced the election of the following officers: O. W. Renkert, President of the Metropolitan Paving Brick Company, Canton, Ohio, as Chairman of the Board of Governors, succeeding Spencer M. Duty, President of the Medal Paving Brick Company, Cleveland, Ohio. R. T. Hutchins, Vice-President and Sales Manager of the Mack Manufacturing Company, Wheeling, W. Va., has been elected President of the Association, succeeding O. W. Renkert. Will P. Blair, Cleveland, Ohio, is First Vice-President, and C. C. Barr, President of the Barr Clay Company, Streator, Ill., Treasurer; Edward E. Duff, Jr., Cleveland, Ohio, Executive Secretary; Miss B. L. Beller, Cleveland, Ohio, Assistant Treasurer; and Stanley A. Knisely, Cleveland, Ohio, Assistant Secretary.

A 6 per cent increase in 1922 shipments over those of 1921, despite the railroad strike, coal strike, and subsequent car shortage indicated the demand of communities generally for brick streets and roads. It is the opinion of the Board that if no such obstacles occur during 1923, this year will show a very material increase.



Ideal Triplex mowers ignore the punishment that wrecks the cutting units of other grass cutting equipment for two reasons. First, the "Bulldog" cutting units used are made in the Ideal factory especially for power work. Extra-heavy, of special steels and with Timken bearings, they endure the roughest, hardest use. Second, the cutting units can be raised or lowered by the operator without leaving his seat when going over rough places or drives.

We have demonstrated the Ideal Triplex in places where no other mowers dared follow. No other mower will cut a greater acreage under similar working conditions. No other is so free from repairs and has such prompt service available. Write for our literature.

Ideal Power Lawn Mower Company

R. E. Olds, Chairman

400 Kalamazoo Street, Lansing, Michigan

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Here's a mower that will solve your grass-cutting problems. Has the mechanical refinements of an automobile, yet sturdy as a tractor—simple, fool-proof, mechanically perfect. It welcomes every test. Used and endorsed from coast to coast.

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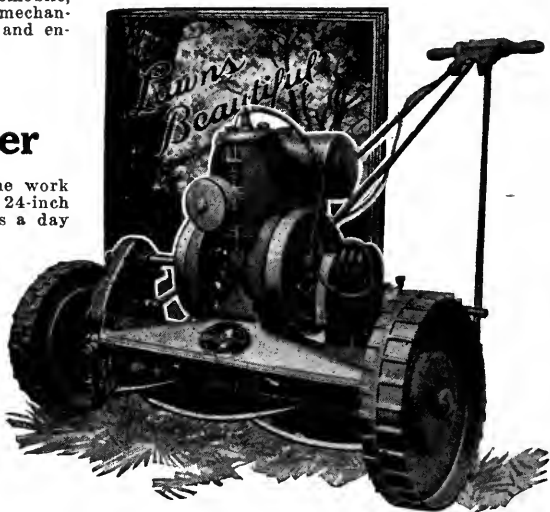
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Jacobsen Manufacturing Co.

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Racine, Wis., U. S. A.

The 4-acre cuts a 6-inch growth of June grass, wiry fescue grasses as smooth as velvet. Operates on unreasonable grades.



New Commercial Engineer with King

The King Manufacturing Company, Chicago, Ill., has announced that Otis L. Johnson, well known as engineer and lecturer on matters of illumination for the Benjamin Electrical Manufacturing Company, has been appointed commercial engineer for the King Manufacturing Company.

Mr. Johnson has been very active in advancing the cause of illumination, working on committees of the Illuminating Engineering Society and the National Electric Light Association, and lecturing before chambers of commerce, Rotary clubs and other organizations all over the United States. He has also served as Chairman of the Chicago Section of the Illuminating Engineering Society, and is now serving as a National Vice-President of that organization.

Charter Company Purchases Mietz Line

The Charter Gas Engine Company, Sterling, Ill., has announced the purchase of the entire Mietz oil engine business, heretofore carried on at 128-138 Mott Street and 430 East 19th Street, New York City, by the August Mietz Corporation and the Reliance Oil Engine Corporation. This effects a merger and consolidation under one management of two of the oldest internal combustion engine companies.

The Mietz oil engine was first built in 1895 by Mietz & Weiss, and since that time there have been placed in service some 375,000 horsepower in all parts of the world. The first Charter gasoline engine was built in 1886 and is claimed to have been the first commercially successful engine to use liquid fuel.

The Charter Gas Engine Company is now moving all the physical assets comprising the Mietz engine to its plant in Sterling, Ill., and in the meantime is filling repair orders for New York City. A portion of the personnel of the August Mietz Corporation organization has been engaged for work by the Charter Gas Engine Company, insuring a thorough working knowledge of the manufacture of Mietz engines.

Gas Street Lamp Installations

In addition to the list of cities given in the February, 1923, issue of THE AMERICAN CITY, the following cities have recently installed additional Welsbach street gas lamps: Granite, Okla.; Brownwood, Texas; Glen Ridge, N. J.; Worcester, Mass.; San Francisco, Calif.; Limestone, N. Y., and Coleman, Texas.

Service Motors, Inc.

Announcement has been made that Service Motors, Inc., a Delaware corporation, has taken over the business of the Service Motor Truck Company, Wabash, Ind., and will continue to build Service motor trucks and Service railroad motor coaches. The new firm has assets in excess of a million dollars. This is a result of the reorganization plans started last November for the Service Motor Truck Company, and

assures adequate capital to meet all needs for manufacture and further expansion.

Paul Moore, who is the President of the new company, has been with the Service Motor Truck Company for eight years and is thoroughly familiar with all the details involved in the manufacture and distribution of trucks. He has had charge at various times of sales, advertising and production departments of the Service trucks.

Home and City Beautiful Exposition

Final arrangements for the American Home and City Beautiful Exposition, to be held on the Million Dollar Pier in Atlantic City, June 16 to September 8, are now nearing completion. American manufacturers have shown unusual interest in the Exposition because of the encouragement given to an educational program in home and city beautification. The management of the Exposition is in the hands of A. Conrad Ekholm, Million Dollar Pier, Atlantic City, N. J.

All of the exhibit floor space on the Million Dollar Pier in excess of 100,000 square feet is to be used for this Exposition, which will have eight principal groups with allied classifications as follows: public and private buildings; materials, equipments and furnishings; the garden, seeds, accessories and supplies; art, sculpture and ornaments; musical instruments and reproducers; The City Beautiful, embracing municipal improvements, hygiene, sanitation and accident prevention; pure food products, confections and beverages; recreation, athletics, resorts and travel information, and a section devoted to radio.

The municipal exhibits will cover not only the general requirements of a city, but will have reference to the needs of the replanned city and the building of new cities along modern city planning lines. In the "City Beautiful" section of the Exposition there will be shown model streets, gardens, parks and good roads, and other exhibits to promote community progress.

In connection with the Exposition, it is planned to hold a contest in which prizes will be offered by the management for the most attractive public squares and war memorials in American cities. All communities throughout the country will be invited to send photographs, which will be prominently displayed during the period of the Exposition. A number of distinguished city planners and others who have been prominent in city beautification movements have been invited to serve on the City Beautiful Committee, and acceptances have already been received from the following: John Nolen, city planner, Cambridge, Mass.; Nelson P. Lewis, Chief Engineer of the Plan of New York and Its Environs; Carl Bannwart, Superintendent, New Jersey Shade Tree Commission; Andrew Wright Crawford, Secretary, Art Jury, Philadelphia; Harold W. Dodds, Secretary, National Municipal League; Harold S. Buttenheim, Editor, THE AMERICAN CITY. Members of this committee will be chosen to act as a Board of Judges in the contest.



Col. A. F. Foote of Massachusetts Says—

"I give my strongest opinion that a State Police should be equipped with as many motorcycles as possible."

Massachusetts State Police at present are equipped with 70 INDIAN Motorcycles.

Here's Col. Foote's letter in part.

Boston, Mass., March 15, 1923.

"Last year had approximately 40 (INDIANS) in operation. The motorcycle troopers covered 302,000 miles, including the very worst roads in back country. Some 800 arrests made, from murder to misdemeanors. Approximately \$50,000 of stolen property and fines recovered. Violation of motor vehicle law, over 300; persons warned, but not arrested, probably over 1000.

No question whatever would have been very much handicapped, if not equipped with motorcycles. The horse covers not over 30 miles a day, the motorcycle over 200—and kept constantly in service.

Upkeep and maintenance very reasonable.

Practically every crime committed outside city limits has an automobile involved, for that reason it is absolutely essential that police be equipped with rapid means of transportation.

Col. Alfred F. Foote, Commissioner."

Write Dept. A-5 for our special police booklet,

"Maintaining Law and Order."

HENDEE MANUFACTURING CO.
SPRINGFIELD, MASS.

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-a police go getter



A Credit to your Administration

THE MACK combination flusher and sprinkler doing its work effectively and economically on any highway reflects credit upon the community's administration.

This particular municipal equipment possesses many exclusive features in addition to the well-known excellence of Mack quality and construction. It has a single engine system; ample power for both truck and pressure pump; low maintenance cost; one man operation.

Our engineering department is well equipped to analyze any specific problem of motorizing municipal equipment. An inquiry does not incur the slightest obligation on your part.

INTERNATIONAL MOTOR COMPANY

25 Broadway New York City

Branches owned by this company operate under the titles of: "MACK MOTOR TRUCK COMPANY" and "MACK-INTERNATIONAL MOTOR TRUCK CORPORATION"

Capacities: 1½ to 7½ tons. Tractors to 15 tons.

PERFORMANCE COUNTS



lively interest in the zoning of the city of Chicago from the very beginning of the agitation of the subject up to the final passage of the zoning ordinance. It took a foremost position in urging its own members, the owners of real estate and the public at large, to cooperate with the official Zoning Commission in its work. It felt that the people who owned property and who did business in a particular locality were best qualified to determine what restrictions should be placed upon such property. Moreover, the ordinance, which was framed with the full knowledge and acquiescence of the people at large, would be most acceptable to the city authorities and more easily enforceable.

"The industrial situation, the land suitable for subdivision purposes, the different commercial centers of the city, were all fully discussed by the members of the Chicago Real Estate Board who were interested in those particular subjects, but when the question of the limitation of the height of buildings in the heart of the city arose, the Board's Zoning Committee found many questions involved which were rather remote to real estate. It found that the congestion of streets was involved, that safety to property and life was an important factor, and that the question of future street transportation should also be considered. Accordingly, it invited to a meeting at the Board rooms the 1,400 owners of real estate in the down-town district to confer on the subject. That meeting resulted in the formation of a 'Citizens' Committee' to take up the subject from every angle. On that committee were students of health, expert fire underwriters, representatives of fire prevention bureaus, architects, engineers, skyscraper owners and managers, the owners of down-town property, not so highly improved, experts on congestion, street railroad officials, etc.

"The studies of this committee ran over a period of six months. The committee's investigations and the conclusions drawn by the Real Estate Board from those investigations were submitted to the Zoning Commission of the city and subsequently published in book form.*

"The Board found that in Chicago, at least, the economic height of a building in the business center was between fifteen and twenty stories, but that the economic height of a block where all the buildings were erected to that height would probably be from twelve to fourteen stories; that if the only consideration was to be a matter of fire protection, the proper height would be eight stories; that if the only question of concern was health, the extreme limit might be considered three or four stories. But giving all these matters what was felt to be their proper consideration, also giving proper weight to the interest of the community at large, the Board recommended that there should be some relation between the height of buildings and the width of the street, and that above this height the property owner might be allowed an additional four feet in height for each one foot setback from the street line. This, ex-

perts said, would give every portion of the street sunlight during some time of the day. The recommendation for Chicago was a limit of 220 feet on the street line where the streets were 100 feet or more in width, 200 feet where the streets were 180 feet wide, and 180 feet where the streets were 66 feet or less in width.

"It is to be regretted that the Zoning Commission, notwithstanding these scientific studies, adopted a height limit of 264 feet, higher than that allowed in any zone ordinance in America and somewhat higher than the extreme limit which had hitherto been allowed in Chicago.

"The Commission itself seemed in favor of a lower height limit than was adopted, but felt that insistence on it would endanger the securing of zoning.* A reduction in height limits was also favored by certain civic and engineering organizations and special committees; but it appeared that certain interests in Chicago had ambitions to erect buildings of extreme height, and that they wished to carry their plans through regardless of what others believed to be the public weal. Our city likewise was confronted with a general apathy of the population at large.

"So the selfish interests of the few prevailed, although it was clearly demonstrated that the value of land in the central business district, in the aggregate, would be increased by the lower limitations proposed. Obviously, it was a question of the private gain of the few against the general welfare of the many. But, more than that, it was a question of whether the city of Chicago preferred to put profits and business interests before the health, morals, safety and general welfare of her citizens.

"The Zoning Commission, under these circumstances, undoubtedly acted wisely, because it was vastly more important that zoning should be secured for the city than that the height of buildings should be limited in the "Loop." In years to come, however, when street congestion has increased to such an extent as to injure the rental return of a skyscraper, it will be seen that the advantage hoped for from the erection of higher buildings was a delusion and that the private interests only succeeded in creating a "Frankenstein" monster to accomplish their final destruction.

* EDITORIAL NOTE.—H. T. Frost, Chief of Staff of the Chicago Zoning Commission, in a recent letter to THE AMERICAN CITY, Says:

"The Zoning Commission would have preferred a lower height limit, but without pyramiding buildings as suggested by the Chicago Real Estate Board's recommendation. Such pyramiding of buildings would permit rentable floors 550 feet high, thus increasing usable space and supporting street congestion. This, incidentally, was overwhelmingly the view of the Citizens' Committee.

"An outstanding feature of our down-town problem is that Chicago has had on three separate occasions a height limit of 260 feet. Precedent has established this horizontal plane. The zoning ordinance has recognized this plane, but has limited it to a very small area and by means of other features has overcome its most serious objections.

"The ordinance provides for a reduction of cornice projection which, so far as light and air are concerned, has the effect of reducing the height previously allowed 8 feet as applied to a 66-foot street. It provides for setbacks in alleys (which occur in practically all blocks) so that at the height limit there must be 53 feet between buildings on opposite sides of an alley. Buildings could heretofore reach the ultimate height at the alley line—and alleys range from 6 feet to 18 feet in width, with an average of about 14 feet."

* "Studies on Building Height Limitations in Large Cities, with Special Reference to Conditions in Chicago." See THE AMERICAN CITY for April, 1923, page 411.

The Effect of Meters on Water Waste

An Illuminating Discussion of Water Waste in Chicago and of the Effect of Metering in Other Cities

By L. R. Howson

Alvord, Burdick & Howson, Consulting Engineers, Chicago, Ill.

THE Chicago water-works furnishes an extreme and exaggerated example of the fact that water waste is an economic loss. Water waste seriously impairs the character of water service and results in greatly increasing costs to the community at large. A study of the history of the Chicago water-works reveals a series of unusually large additions to plant, each designed to relieve conditions for several years, but each in turn being proved inadequate almost as soon as completed, largely because of inability to control water waste.

The Chicago water-works at the present time has 7 cribs and about 60 miles of tunnels from 5 to 14 feet in diameter, with a nominal capacity of over 1,400 million gallons per day. There are 10 major pumping-stations with a nominal pumping capacity of 1,150 million gallons per day and an average daily pumpage of nearly 800 million gallons per day. Nearly 3 million people, scattered over an area of approximately 200 square miles, are served by this system through a network of cast iron mains from 4 to 48 inches in diameter,

having an aggregate length of nearly 3,000 miles.

Investigating Chicago's Wastefulness

About six years ago the Chicago Bureau of Public Efficiency made a study of the Chicago water-works and engaged the firm of Alvord, Burdick & Howson to make the engineering investigation. The several departments of the water-works, such as pumping-station operation, water-pipe extension, valve and hydrant service and water-works control, were all studied to ascertain their relative efficiencies. The study showed that so far as the economies to be effected and the improvement of the water service were concerned, the all-important problem of the Chicago water-works was the restriction of water waste. It was estimated that over 85 per cent of all the economies that could be effected in the Chicago water-

The Results of Water Waste

The waste of water is important from all view-points. Pumping an unnecessarily large amount of water involves the construction of costly cribs, intakes, pumping-stations, and larger feeder mains. In addition to the investment cost, it involves the necessity of pumping against greater heads to overcome friction in the mains, requiring heavier equipment and greater consumption of fuel.

The effect upon the character of service rendered by the water-works is greater. The average pressure in Chicago at present is approximately 20 pounds. Nearly three-quarters of the city is suffering from deficient pressure; that is, the pressure will not enable fixtures on the third floor to be used at all times. This is due primarily to the friction caused by an excessive amount of water passing through the mains. It is well known that friction in mains increases as the square of the quantity. Accordingly, if the quantity of water passing through the mains can be reduced one-half, the friction loss will be reduced to one-quarter the original amount.

Water pumped and wasted vitally affects the ability of the plant as a whole to furnish the fire protection necessary in great conflagrations. Water pumpage is directly reflected in the dry-weather sewage flow. Waste therefore has an important bearing on sewage disposal and its cost.

works could be secured by universal metering.

An investigation of what can be accomplished by universal metering must necessarily involve a forecast of the future.

Losses of the past cannot be recovered, and it is only the possible savings of the future in which we are interested.

Ordinarily, water-supply demands increase at approximately the same rate as the population which is being served. Accordingly, in a study such as this, it is important to know the population that is likely to make demands upon the Chicago supply in the future. It is estimated that the Chicago population will be 3,500,000 in 1930, and 4,900,000 by 1950.

Studying the growth in miles of mains, population and pumpage from 1860 to 1921, it is estimated that unless the present policy of waste control is materially altered, the pumpage will amount to 2 billion gallons per day by 1950, or approximately $2\frac{1}{2}$ times what it is at the present time. The population at that time will probably be only about $1\frac{3}{4}$ times what it is now.

Under the present conditions of waste control, the daily consumption of water per service will be approximately 3,800 gallons per day, and the consumption per capita 415 gallons per day by 1950. The present per capita use is 276 gallons per day. In the ordinary water-works plant the growth in investment is approximately proportional to the growth in population, and prior to the war the average investment was about \$30 per capita.

"Use" and "Waste" Defined

The word "use" covers every legitimate application to which water can be put for domestic, commercial or municipal purposes, including such water as is required for sprinkling lawns, flushing sewers, the extinguishment of fires, and any other purpose for which water has any real value. It also includes an allowance for unavoidable losses, which occur even under rigid waste control.

By "waste" is meant the preventable losses occurring through either faulty or careless operation of the water fixtures, and representing that part of the water pumped which does not produce results of

value to the consumer or the community. Losses, each small in itself, become important in the aggregate when it is considered that there are at the lowest estimate 2,500,000 fixtures connected to the Chicago water system.

It is important to bear in mind that no efforts should be made to curtail the legitimate uses of water, which include a certain amount of unavoidable leakage, but that every effort should be made to overcome the actual waste of water, which results in no economic good and which does result in a curtailment of the service and the expenditure of large sums in addition.

Chicago Only 10 Per Cent Metered

The Chicago water-works now furnishes service to approximately 225,000 premises.

Of this number, less than 10 per cent are taking water through meters. The remaining 90 per cent get water on a so-called "flat rate" or frontage assessment basis. In 1921, the $9\frac{1}{2}$ per cent of the services which were metered used 25 per cent of the water pumped, and paid at an average rate of $6\frac{1}{4}$ cents per 1,000 gallons for all the water used. The remainder of the supply unmetered

yields a revenue of but 1.6 cents per thousand gallons, or materially less than the actual cost of supplying it.

Results of Water Waste

The waste of water is important from all view-points. Pumping an unnecessarily large amount of water involves the construction of costly cribs, intakes, pumping-stations, and large feeder mains. In addition to the investment cost, it involves the necessity of pumping against greater heads to overcome friction in the mains, requiring heavier equipment and greater consumption of fuel.

The effect upon the character of service rendered by the water-works is greater. The average pressure in Chicago at present is approximately 20 pounds. Nearly three-quarters of the city is suffering from deficient pressure; that is, the pressure will

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Water pumped and wasted vitally affects the ability of the plant as a whole to furnish the fire protection necessary in great conflagrations. Water pumpage is directly reflected in the dry-weather sewage flow. Waste therefore has an important bearing on sewage disposal and its cost.

Another effect of water waste is to postpone indefinitely the further purification of the Chicago water-supply by filtration. Based upon an estimated cost of filtration at the present time of \$35,000 per million gallons capacity, the cost of the plant required to filter only the water which Chicago now wastes would be approximately \$30,000,000. The cost of alum, chlorine and other operating expenses directly chargeable thereto would be correspondingly large.

The reduction of waste is therefore necessary from the standpoint of finance, also for protection from fire hazard, and, most of all, in order to provide adequate service and safe and properly purified water-supply for the city.

Universal Metering

A study of the result of any attempt to control waste has demonstrated that the only practicable means of controlling it is by universal metering, in which every water service is metered and every consumer pays in proportion to the water used. House-to-house inspection has usually failed on account of its being periodic and because of the psychological fact that it does not enlist the consumer as an active agent in its success.

Under universal metering every consumer is made a partner in the business.

He has an incentive to curtail waste, but on account of the cheapness with which an adequate water-supply can be secured, there can be no incentive to reduce actual use. The average bill for all legitimate uses of water by a family of five, based upon the Chicago meter rates, would be only about one cent per day.

A meter is on the job day and night and assists the water user in being his own inspector. A meter system therefore makes a house-to-house inspection system continuous and in Chicago would provide some 300,000 inspectors, all serving without cost to the city of Chicago. Meters, once installed, work continuously. If the householder neglects his premises, he, rather than the city, is penalized. This, obviously, is as it should be.

What Is "Waste"?

By "waste" is meant the preventable losses occurring through either faulty or careless operation of the water fixtures, and representing that part of the water pumped which does not produce results of value to the consumer of the community. Small individual fixture losses become important in the aggregate, as there are many thousands of fixtures connected to each water system.

Metering, in addition to producing the most effective permanent method of controlling waste, provides the only equitable method for apportioning water payments among the consumers. It recognizes the actual uses of water by small consumers, taking into consideration the quality of plumbing, expenditure for repairs, etc. There is no reason why one householder should buy ice for refrigeration in summer while his next-door neighbor allows the water to run continuously for that purpose and both pay the same water bill, as they do under the flat rate system. Neither is there any reason why exactly similar premises, one occupied by a family of two, and the other by a family of ten, should pay the same rate for water, as they do under the flat rate system. No other commodity is sold on that basis.

Popular Objections to Metering

There are, of course, popular objections to metering, none of which will withstand the test of economic analysis. One objection is that in such a city as Chicago, where there is a large tenant population, the landlords are fearful that the tenants will have no incentive to be economical in the use of water and that the landlord's bill will there-

fore be increased. The analysis of statistics in other cities has entirely disproved this.

Another objection to metering is that it will tend to restrict the real use of water. One of the arguments advanced is that the poor washwoman will be charged an undue amount of water for service. When it is pointed out that some 75 ordinary wash-boilers of water can be purchased for one cent, this argument, too, will have little force.

The third objection to metering is that water bills in general will be increased. This also is far from the truth. In Milwaukee, where the water rate is practically the same as in Chicago, nearly 80 per cent of the consumers pay less than the Chicago flat rate for a house with one set of fixtures, and 90 per cent pay less than the Chicago flat rate for a two-flat building with one complete set of fixtures in each apartment. In Lexington, Ky., about 40 per cent of the consumers use less than 2,000 gallons per month, which at the Chicago meter rate would be equivalent to an annual bill of \$1.50, approximately one-quarter of Chicago's flat rate for houses with one set of fixtures. Over 70 per cent would have an annual bill at Chicago meter rates of less than \$3, and 97 per cent less than \$15 per year.

In Terre Haute over 50 per cent of the consumers pay at the minimum rate, which covers the use of 3,000 gallons per month. This is equivalent to an annual payment of \$2.25 at the Chicago meter rate.

In Cleveland, 65 per cent of all the consumers pay less for their water than the Chicago flat rate for a house with one set of fixtures, and 20 per cent pay less than half as much.

In those towns the use of water is not restricted. Waste is practically eliminated. The consumer would pay at the Chicago meter rates much less for water than Chicagoans are now paying on the flat rate system. If meters were placed on all services in Chicago at the present schedule rate, it is probable that the consumers' bills would be so reduced as to seriously impair the revenues of the water department, rather than increase the consumers' bills. Metering assumes an equitable adjustment of rates.

Effect of Metering in Other Cities

Much can be learned from intelligent

study of what metering has accomplished in other cities, consideration being given to fundamental conditions before utilizing the figures in each case.

A number of years ago Milwaukee started with the installation of meters. When metering was started, the consumption of water per service was 2,250 gallons per day. Metering reduced this to approximately 1,800 gallons per day; in other words, nearly a two-thirds reduction.

In Fall River, Mass., when metering was started, the consumption of water was 760 gallons per day per service. This was reduced to 520 gallons per day when 16 per cent metered.

In Poughkeepsie, N. Y., the consumption before metering was 1,475 gallons per service per day. This was reduced when 86 per cent metered to 490 gallons per day, a reduction of about two-thirds.

In Madison, Wis., when metering was started, the consumption per service was 780 gallons per day. This was reduced to 300 gallons per service per day, which has since increased somewhat.

In Cleveland before the introduction of meters, the per capita consumption was 170 gallons per day. This was reduced to slightly less than 100 gallons per day when completely metered, and has since increased about 10 per cent.

In the 46th Annual Report for the Department of Public Works of Chicago for the year 1921, the City Engineer gives the results of metering in the Hegewisch District. A district supplying 850 families was isolated and metered. Before metering in 1920, this district used an average of 2,730,000 gallons per day, and after deducting 130,000 used industrially and by Burnham, the daily per capita use was 433 gallons. In November, 1920, when about half the meters were installed, the average consumption had dropped from 2,730,000 gallons to 1,640,000 gallons per day. In October, 1921, with complete waste reduction, the pumpage had been reduced to 620,000 gallons per day. Allowing for industrial and Burnham use, the domestic use was 462,000 gallons per day, the equivalent of 75 gallons per capita. In other words, in this district in 1½ years' time the consumption has been dropped from 433 gallons per capita per day to 75 gallons per

capita per day, or to approximately one-sixth of that when metering was started.

The report further states that over 60 per cent of the services used less than 23 gallons per capita per day, which at the Chicago meter rate would cost 52 cents per capita per year, or \$2.60 per year for a family of five.

What Is a Reasonable Water Consumption?

The total pumpage of the Chicago water-works is made up of:

1. *Industrial uses.*—The meter records show the equivalent of about 50 gallons per capita to be used by the industries.

2. *Domestic uses.*—It is believed from a study of all available data that 45 gallons per day is ample for all domestic uses.

3. *Public uses.*—About 20,000,000 gallons, the equivalent of 7 gallons per capita per day, has been allowed for street flushing, fires, etc.

4. *Unavoidable losses.*—It has been found that no matter how rigid the system of water control, there is a considerable percentage of all water leaving the pumping-stations which cannot be made a revenue producer. This water is lost through leakage in the mains, leakage in the services between the mains and the consumer's meters, under-registration of meters, and similar causes, and a careful study of many cities where complete waste control is in effect, has led to the use of 23 gallons per capita per day as a reasonable allowance for the unavoidable loss in the Chicago water-works.

It is believed that a total of 125 gallons per capita per day represents the use and

unavoidable loss of water in Chicago. The gross pumpage in 1921 averaged 276 gallons per capita per day, leaving the preventable waste at 151 gallons per capita per day, or approximately 56 per cent of the total pumpage.

This amount of preventable waste in Chicago, amounting to approximately 425,000,000 gallons at the present time, is more than the total pumpage in Cleveland, Cincinnati, Newark, New Orleans, Providence, Atlanta, Boston and Columbus, serving a population of over 3,000,000 people. A waste so large as this is certainly worth investigating and eliminating.

If meters are placed on all new services and a careful leakage survey inaugurated, it is believed that the daily per capita consumption can be reduced and not exceed approximately 275 gallons per capita per day in 1950. If meters are placed on all services in the next ten-year period, it is believed that consumption can be reduced to 125 gallons per capita per day by 1950 and thereafter be maintained practically constant. The elimination of waste in this manner would mean a total saving in both operation and deferred construction expenditures prior to 1950 of about \$233,000,000, or an average of over \$7,500,000 per year.

ACKNOWLEDGMENT.—Abstracted from a paper read before the Indiana Sanitary and Water Supply Association.

Do You Use Electrical Signs to Advertise Your City?

Business men of East Rutherford, N. J., have "killed two birds with one stone," as it were. For their electrically lighted road sign not only advertises the city but also aids drivers of night traffic to know their exact location. Curves, crossroads, and bridges could be indicated at night—and by day—in the same manner illustrated.

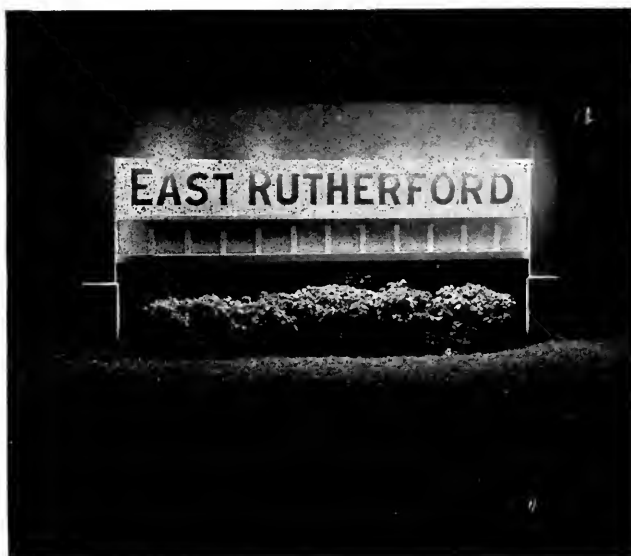


Illustration by courtesy of Electrical Merchandising

Limitations of Bituminous Patching

By John S. Crandell

IN spite of the enormous amount of indiscriminate patching of pavements, it is astonishing that there are so few failures. In fact, it is not uncommon to see the bituminous patches standing up better than the pavements themselves. But although results have been so generally good, judgment should be used before patching is begun.

There are two types of patches—hot and cold. When properly handled, both types are equally good. Hot patches are made in two ways: the bitumen is heated and sprayed over the broken stone which has been placed in the hole or rut; or the hot bitumen is mixed with hot aggregate and the hot mix is placed in the area to be patched. Cold-patch work may be either penetration or mixed method, but the latter is preferable. Cold-patch has the advantage over hot-patch in that the mix may be used at any reasonable time after it is made, say up to six weeks, while hot-patch must be used immediately.

Items that should be considered before a road is patched are:

- a. The type of surface to be repaired
- b. The size of the areas to be patched
- c. The proximity of the mixing plant, or supply of bitumen
- d. The price of stone or gravel

Not All Roads Can Be Patched

While any kind of surface may be patched, it is not wise to attempt it on them all. Inexperienced road men sometimes repair water-bound macadam or gravel roads with bituminous-bound patches. In a certain town the macadam became badly rutted during the winter and early spring. The Road Superintendent carefully filled all the ruts with a cold-patch mixture as soon as the weather permitted. The results were awful: every rut became a ridge with deep ruts on either side of it, and there was then no way to repair the roads except to scarify them.

In another locality a number of surface-treated gravel roads were patched with cold-patches made with tar and broken stone. These patches became much harder

than the surrounding road, so that after a year's wear the patches stood up above the general level, and the condition became worse as the months passed. If plain water-bound macadam or gravel roads are to be patched, the mending should be done with materials identical with those originally making up the road. In general, bituminous-bound patches are out of place in such locations.

Patching Different Kinds of Roads

In the borough of the Bronx, New York City, there are about 200 miles of water-bound macadam roads, tar surface-treated since about 1911. Before each surface treatment these pavements are gone over carefully by a patching gang, and any depressions are repaired. The method of patching is to clean out the hole, and if it is deep, to fill it with broken stone, which is tamped into place. Hot refined tar of medium consistency is then applied and is covered with clean pea-gravel. If the area to be patched is shallow, it is swept, given a paint coat of hot tar, and pea-gravel is used for the cover. The tar used is Tarvia A, which must be heated. While the surface treatments given have been with tar of the consistency of Tarvia B, that is, a tar of cold application, and the patches have been with a heavier grade of tar, still, the results over a period of 12 years have been satisfactory. It is more usual, however, to patch surface breaks with the same grade of material as that which will be used for subsequent surface treatment. In using a heavy binder for this work, there is the danger of building up a patch that is stronger than the pavement.

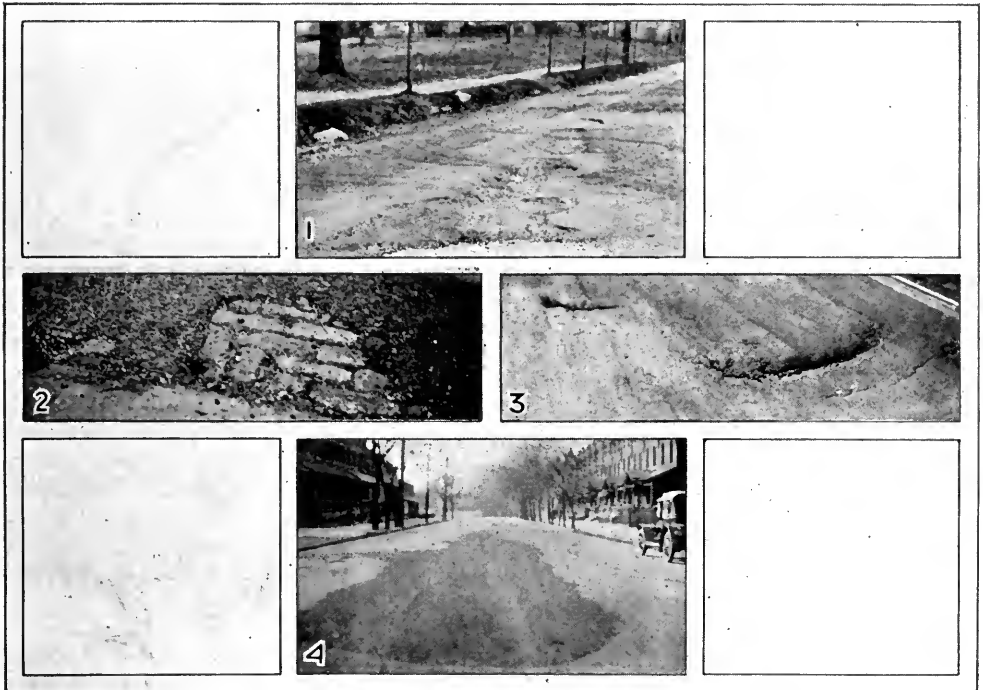
The opposite effect is observed when penetration or mixed-type pavements are patched with broken stone which is then given a surface treatment with light tar. Of course the patch, in such cases, is weaker than the pavement proper, and soon disintegrates unless carefully watched. These pavements should be patched with a heavy binder, either hot or cold type. The patches should be very carefully made, un-

der the supervision of an experienced foreman. Many excellent pavements are unduly injured by careless patching. Given experienced workmen, good road metal, and the proper grade of binder, there is almost no limit to which the patching of bituminous-bound pavements may be carried.

Cement concrete pavements require much more care to skillfully patch than is usually given them. At first it was thought that all that was needed was to pour some bituminous material into the cracks once a year. Now it is recognized that this is

tact by patching first and then surface-treating with binder. Slabs sometimes shatter so badly that patching is out of the question, and the slabs must be replaced with new ones. Holes sometimes develop, and it is a question whether it is better to patch with bitumen or replace the area with a cement concrete patch.

To any one familiar with maintenance it is unnecessary to say that these different cases require different methods of repair; that filling a narrow crack is not the same as filling one 2 inches wide; that patching



SOME OF THE PROBLEMS OF BITUMINOUS PATCHING

1. To patch or not to patch. 2. A cold patch in West Philadelphia, Pa., in which too little binder was used. 3. A cold patch in New Rochelle, N. Y., in which too much binder was used. 4. A good patch in a sheet asphalt pavement in West Philadelphia, Pa.

far from sufficient. In many instances fairly large areas must be repaired, and the patches must be made as strong as the concrete. Frequently corners of slabs break and must be replaced with bituminous-bound patches that must stand up better than the original concrete did. Cracks sometimes spread transversely, so that by the time the patching gang arrives there is a fairly wide crevice to be filled. The surface often peels irregularly, as in some of the New York State and one of the Connecticut roads, and must be kept in-

a hole 4 inches deep is another matter from treating a peeling surface. Yet many repair gangs continue in the same old way, without taking the trouble to experiment when new conditions arise.

Requests are often made for a material to be furnished that will be equally good for filling narrow or wide cracks, that will not run nor chip, and that will adhere firmly to the concrete. It is impossible to furnish anything that will meet all these requirements. Any bitumen that is hard enough to fill a crack 2 inches wide with-

out becoming unduly soft in summer, will of a certainty crack in cold weather. Any bitumen that is soft enough not to crack in winter will surely run in hot weather. The intelligent way to handle the matter is to secure a material that is satisfactory for filling the usual fairly narrow crack. When a wide crack is to be filled, mix this material with either sand or pea-gravel, thus making a mastic that is stiff enough to stand up under the hot sun and strong enough to resist cracking in winter.

A light tar that is satisfactory for surface-treating cement concrete roads is not suitable for building up large patches of considerable depth. And a heavy binder that is ideally suited for patches of large extent is seldom good for surface treatments. Exception here is made of "cold-patch tar," which is good in either case. Engineers and others interested in the repair of cement concrete pavements should take care to order a bitumen that most nearly meets their demands.

Good skin-patching over cement concrete may be accomplished with a light tar applied cold. This should be covered with pea-gravel or small, clean stone chips. This will not interfere with the later application of a surface treatment with light tar. Many miles of cement concrete roads in New York State have been so treated during the past year.

Deep patches and those of size greater than may be patched as just described should be made with either hot, heavy tar binder or with cold-patch tar. Where the corner of a slab has been broken off, great care must be exercised to see that before the bituminous-bound material is placed, the subgrade is firm and unyielding. There is no use putting in a patch in such a location if the subgrade is not well drained.

It used to be the custom to mend large holes in cement concrete pavements by removing the faulty material and putting in a cement concrete patch. This method is good, but it has one great disadvantage. A concrete patch requires at least seven days to cure, and during that time traffic must be diverted from the patched area. Often this means the partial closing of the road. The public is getting tired of detours and of waiting in line to go by an obstruction. Hence the bituminous patch is being used to greater and greater extent, because as

soon as it is in place the road is ready for traffic. Either hot-patch or cold-patch may be used. The hot-patch has the advantage of setting up immediately, while the cold-patch may be a little soft for a day or two. When the slab is so badly shattered that it must be replaced, it is sometimes advisable to build a temporary bituminous section in its place, reserving the reconstruction of the concrete slab until that time of the year when traffic is least.

Cold-Patching

Cold-patching is such an easy process that wood block, brick and even granite block pavements are repaired this way. If the stone of the patching mix is hard and tough, there is no good reason why the patch will not give good service for a long time, but it is not good judgment to patch a granite block pavement with a bituminous patch, the stone in which is a soft limestone or slag. Many street car companies are using cold-patch along the rails. Provided the rails are not loose, the results will be good, but if the rails are loose, the money spent for this kind of patching is wasted. A bituminous patch in a wood block pavement must be considered only as a temporary expedient, because if the blocks swell after a rain they are likely to push the patch out of place. Later, when the blocks shrink, there is additional trouble. Yet many a wood block pavement has been saved by timely patching with a bituminous mix.

Size of Patches

It is often a question whether it will pay to patch a large area or whether it would be cheaper and better to rebuild the pavement. There is no rule to guide us; good judgment and past experience are needed. I have seen patches 250 feet long and 18 feet wide which seemed to me to be examples of poor judgment. It would have been cheaper and better to scarify and resurface. Yet there may be cases where such huge patches are justified; for instance, an out-of-the-way location where the expense of scarifying and resurfacing would be exorbitant because of hauling charges and time wasted. Here it would be cheapest to make up a cold-patch mix, haul it to the job, and patch fairly large areas.

The proximity of a plant has much to do

with the type of patch that will be used. If auto-truck service from a producer of bitumen may be secured, the hot-patch method is preferred by many engineers. It is then a simple matter to build penetration patches with great rapidity. The stone is laid and rolled well in advance of the arrival of the tar, so that there is no delay in spreading the binder. This method is in use in many localities where auto-truck service is feasible. But most roads are not close enough to the distributing point to make this possible, and hence the cold-patch method is more popular. Cold-patch has the advantage of being usable at any time anywhere.

Stone, Gravel, or Slag for Patches

The patch should be no better and no worse than the rest of the road. Therefore, it stands to reason that the best patch in any given case will be that one which is made with metal resembling the original as closely as possible. If the original is a soft limestone, then a trap-rock patch may be too hard.

Sometimes the attempt is made to save money by using gravel as the aggregate for all patch-work. A good gravel patch is a fairly good patch, but gravels vary so that it is not wise to recommend their use for this work. Of course a gravel road should be patched with gravel, but I think it is a mistake to try to repair a bituminous penetration or bituminous concrete pavement with a gravel patch.

Slag roads are best patched with slag or limestone patches. If slag is used for the aggregate, then an extra allowance of bitumen should be made, since slag is more porous than stone and takes up the binder to a greater amount.

A patch will stand up in direct ratio with the quality of materials of which it is made and the care with which it is constructed. There is a limit to everything, but the limitations of bituminous patching are almost zero if good materials, good workmanship and common sense are used.

ACKNOWLEDGMENT.—From a paper read before the New Jersey State Highway Association.

Purposes Which May Be Served by Municipal Accounting

THE following summary and conclusions are from an address on Municipal Accounting, by J. O. McKinsey, delivered at a recent regional meeting of the American Institute of Accountants at St. Louis and published in full in the *Journal of Accountancy*. The purpose of the discussion was to emphasize the following:

That the purpose of municipal accounting is to serve as an instrument of municipal administration in the solution of certain municipal problems.

That effective municipal administration is dependent on effective municipal organization, and that if accounting is to serve as an aid in administration it must be designed in terms of organization; that the starting point of a municipal-accounting system is an organization chart of the municipality.

That the municipal budget is necessary for effective municipal administration and that an effective budget is dependent on an effective accounting system; that there should be a close correlation of organization, accounting and the

budget, to the end that the budget shall serve as a statement of future accounts in terms of organization responsibility.

That the use of accounting in judging efficiency of municipal operations or municipal employees is dependent on a correlation of accounting and statistical data; that the accounting records alone do not usually provide a standard for this purpose, because of the absence of the profit-and-loss test in municipal operations.

That effective municipal administration as well as public policy requires the preparation and use of comprehensive reports covering municipal operations, and that these reports should be designed previous to the designing of the accounting system, so that the latter may be constructed in the light of the demands of the former; that municipal reports should be designed as an answer to the questions which result from the administration of operations which they cover.

That to accomplish the foregoing it is necessary to have a centralization of accounting, statistical and operating procedures of the city in the hands of one executive, usually termed the comptroller.

The Public Conscience and Accidents

What Some Safety Weeks Have Accomplished, and How the Public Interest May Be Kept Alive

By Marcus A. Dow

President of the National Safety Council

MANY times in the history of the world has the far-seeing vision of an individual or a group brought about a revolution of ideas which have governed mankind for succeeding centuries. Movements which at first were scoffed at and viewed as dreams impossible of fulfillment, have grown into realities and brought blessings into the lives of millions of people.

It was so with the safety movement. Fifteen years ago, a few men dreamed that industrial accidents could be prevented; that there was no need for the suffering and death that had become characteristic of industry. They dreamed, too, of a nation wherein public accidents would be recognized and dealt with as a menace to the peace and happiness of the citizens. And now the briefest consideration of the accident situation in the United States leaves no doubt as to the need of safety in our streets, factories and homes.

Every city contributes its quota of victims to the tragic and unnecessary evil that goes on day after day, week after week, and that is increasing year after year in continental America, largely through individual carelessness and lack of organized effort to eliminate accidents. It is bad enough that 76,000 persons of any age or station in life should be sacrificed on the altar of carelessness in a single year, but when we stop to consider that out of that number 20,000 were children under 15 years of age, of whom 10,000 were babies under five years, it is time for us to rise up in indignation and exclaim, "This cannot go on. Let us get together, put a stop to it, and wipe out this blot upon our nation."

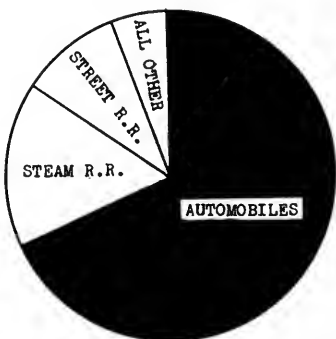
The responsibility of absolving the nation of this indictment of carelessness does not relate any more to the nation as a whole than it does to each individual community; it is a responsibility which rests directly upon every citizen as well. Safety work is no longer an experiment. That it is practical has been demonstrated in thousands of industrial plants, on the railroads and in scores of communities. Safety conserves human life, increases efficiency, reduces economic waste and minimizes human suffering. The growth of the safety movement

in America has been because the American business man possesses something greater than mere business intelligence: he possesses a heart, he possesses a soul. Encouraged by the success of accident prevention in the factory, he has, in many cities, put his organizing ability and his experience to work in the effort to prevent accidents outside of the plant.

Success in preventing industrial accidents has

pointed the way to probable achievement in public safety work. Cities which have carried on successful public safety work—successful to the extent that lives of hundreds of citizens have been saved over certain periods—are unanimous in supporting continued effort along the same lines.

The first organized public safety work was started in Rochester, N. Y., eight years ago under the direction of the National Safety Council. Since that time the accident rate in that city has been well below the average of the nation, on a population basis. In 1916 the total number of accidents of all kinds in Rochester was 179; in 1922 it was 146. St. Louis was electrified when, during the first safety week car-



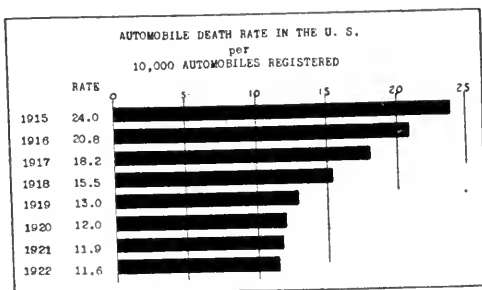
DISTRIBUTION OF VEHICULAR FATALITIES IN AMERICAN CITIES FOR 1922

ried on there, accidental fatalities fell from 24 during the corresponding week the year previous, to 1. A permanent safety organization was immediately formed. After four years of systematic effort, accidental deaths in that city were reduced from 510 in 1917 to only 330 in 1921.

The achievement of St. Louis is particularly noteworthy because the record of that city shows that in 1917 there were 37 persons killed per 10,000 motor vehicles in use, while in 1922 only 13.6 were killed for each 10,000 vehicles. But of all the accomplishments of that city, there is no other so significant as the reduction of the number of school children killed, from 45 in 1919 to 19 in 1921, a reduction of 60 per cent in two years.

Detroit has also had an excellent record since systematic community safety work was organized in 1918. During this period the population of the city increased from 925,000 to 1,075,000, and the number of motor vehicles from 77,000 to 171,000, while the number of automobile fatalities increased from 172 to 185. Particularly gratifying is the decrease in the number of school children killed, from 64 to 40 in 1922.

A safety week in Greater New York last fall, in comparison with the same week in 1921, showed a total of 46 lives saved. Pittsburgh conducted a No-Accident Week in October which resulted in only nine deaths from accidental causes; in 1921, 22 lives were lost during the same week. There was not an industrial accident in that district during the campaign. Detroit in 1921 reduced its accidental deaths 40 per cent over 1920; Cleveland, through an active safety campaign in the public schools, was able to record a 68 per cent reduction in accidental deaths of school children during the 1921-22 school year. Milwaukee has



made automobile accidents almost impossible through the enlisting of 8,000 motorists in a safe drivers' club; Baltimore cut its accidents from 9 a week to 1, in a safety drive a short time ago. Kansas City in 1922 decreased its automobile fatalities to 58 as compared with 65 in 1921. In Cleveland there were 161 fewer accidents of all kinds to school children in the calendar year 1922 than in 1921, a reduction of 50 per cent. And there are many other cities which belong on the honor list of those wherein public safety work has had a reducing effect on the accidental mortality rates.

The psychology of safety is *constant reminder*. Life, health and well-being are things so near the heart of everyone that any project which touches upon them as intimately as safety work does cannot fail to be of interest. The benefits to be derived from community organization are too great to permit of any laxity in attempting to bring safety work into general favor and to secure group support; the motto must be, "Keep everlastingly at it."

How to Keep the Public Interest Alive

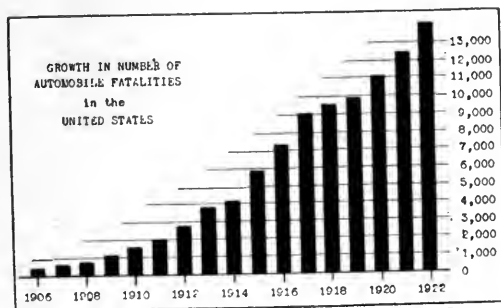
Avenues through which the public interest is kept alive on the subject of accident prevention may be listed as follows:

Safety education in the schools to educate the children to habits of safety that will serve them through the remaining years of their lives.

Active cooperation of the daily press to get the principles of safety into the minds of the people through continual "hammering away" on the subject.

Safe drivers' schools to teach safe practices to the drivers of taxicabs, trucks and private cars.

Schools of safety for industrial foremen to give them help in organizing and teach-



ing safety to the employees in the plants, who form a major part of the city's citizenship.

A speakers' bureau prepared to supply the inspirational note in the endeavors of the community for safer conditions.

Constant advertising of the safety idea through posters and placards vividly portraying the positive and negative sides of the accident prevention idea.

And lastly, *there must be an efficient organization* backed by unanimous public opinion translatable into aid, both financial and moral; this central body to direct, supervise and coordinate all community effort against accidents. In most cities the chambers of commerce, recognizing the economic and humane aspects of accident prevention, have performed real public service by taking the initiative in this work.

In a big city, the solution of the problem of an educational campaign is found in the utilization of such existing agencies as the public schools, the churches, clubs, fraternal and civic organizations, and the press. Through these channels must flow a continual supply of concrete information as to

how accidents can and must be prevented; thus will the contacts and deliverers of the message of carefulness be multiplied until every man, woman and child in the city is imbued with the thought that not to be careful is to invite disaster, and that to be careful means to lessen pain, suffering and regret.

We should take stock of ourselves to determine whether or not in these times of peace, without the incentive of flag-waving and patriotic fervor, we are giving our utmost to whatever form of service falls within our opportunity to render. Any community has it within its power to stamp out the evil of accidents. There must be created an atmosphere of carefulness which will pervade every home, every office, every factory, every school and every church. The public conscience must be awakened and kept aroused to the importance of the thing. Safety must be recognized as a most important asset of civic virtue. There is no other alternative if we are to emancipate ourselves as a nation, as a city, and as individuals from the curse of accidents that are preventable.



CHILDREN BRINGING FLOWERS FOR THE DEDICATION OF THE MONUMENT ERECTED TO THE MEMORY OF THE 286 CHILDREN KILLED BY ACCIDENT IN PITTSBURGH IN 1921

The dedication was a feature of No-Accident Week in Pittsburgh, October 19-26, 1922.

Lansing to Have an Architecturally Uniform Lighting System

Adopts Plan Whereby Every Paved Street Will Ultimately Be Lighted from Ornamental, Underground-fed Standards

By Oscar E. Bulkeley

Superintendent, Board of Water and Electric Light Commissioners, Lansing, Mich.

LANSING, the capital of Michigan, will be the first city in the United States to have an architecturally uniform system of street lighting units. A comprehensive scheme which will provide eventually for the illumination of every paved street by ornamental, underground-fed standards has been adopted, and the first 350 units are now being installed. The lighting plan was formulated by the writer in consultation with illuminating engineers of the General Electric Company, and was an outgrowth of a general feeling of dissatisfaction with the existing boulevard lighting system. It was realized that the time was opportune for a change while the investment in existing lighting was still comparatively small, involving no great loss by replacement, and before making a substantial additional investment for extending the system, especially since the contemplated extensions included the most important thoroughfares in the city.

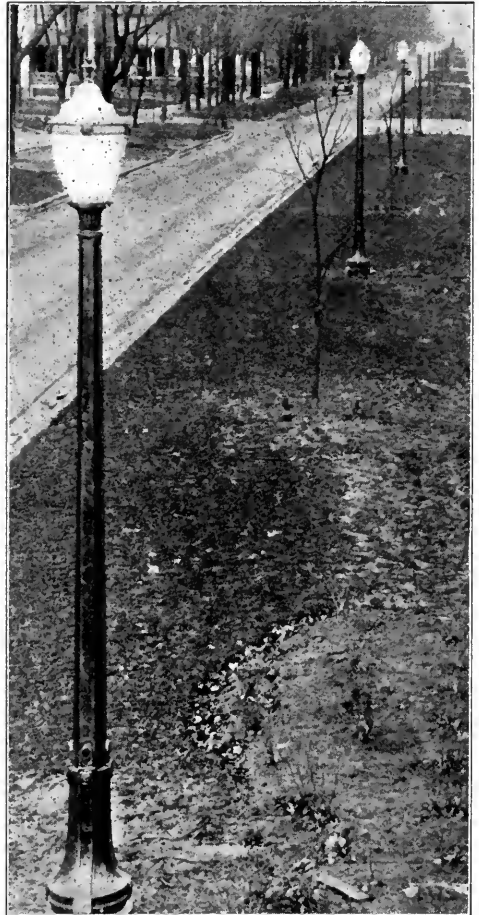
The scheme adopted divides the illumination into five classes, according to types of streets and their lighting requirements, as follows:

- Principal business streets
- Secondary business streets
- Main boulevards and thoroughfares
- Secondary residential streets
- Parks, plazas and other open places

The standards and lighting units on all streets will be of the same architectural family and will harmonize in design with one another and with their surroundings. Thus the distressing variance in types that is so often noticeable where a city's lighting equipment has been acquired piecemeal will be absent in Lansing; on the contrary, a novel and very pleasing uniformity in appearance will characterize it. This installation will be the first in which the design, known by some as the Saratoga Unit, will be produced in alabaster rippled glass,

this pattern having heretofore been restricted to globes having a diffusing surface.

Intensive lighting will be used in the main business sections of Washington and Michigan Avenues. In these sections, standards 20 feet from ground to light



STREET LIGHTING INSTALLATION ON PENN-SYLVANIA BOULEVARD, LANSING, MICH.

These Novalux G. E. units are mounted on King standards and contain 400-candle-power Mazda lamps

source, carrying two Form 12 Novalux units with medium alabaster rippled globes and canopies, each equipped with a 10,000-lumen (1,000 candle-power), 20-ampere series Mazda lamp are proposed. In the bases of the standards will be installed Type I. L. transformers with taps that will permit the future use of 15,000-lumen (1,500-candle-power) lamps. This transformer raises the 6.6-ampere line current to 20 amperes. Not only will this provide for the use of the more efficient high-current lamp, but it will effectively insulate the pole from the high voltage of the underground circuit and protect the lamp from line surges. The standards are to be spaced from 110 to 135 feet apart and opposite each other. At present the business district is inadequately lighted by obsolete cluster type standards, although there are now nearly double the number of standards contemplated in the new lighting system.

Similar units to those just described will be installed along secondary business streets, with the difference that only one unit to a standard will be used. The standards will be approximately 15 feet from the ground to the light source. On the more important secondary streets and on the principal streets beyond the two-light standards, 10,000-lumen (1,000 candle-power) lamps are planned. In other locations, 6,000-lumen lamps, with provision for the use later of 10,000-lumen lamps, will be used.

The spacing of the units on these secondary streets will vary with the width and importance of the street. On the narrow ones, the standards will be staggered, with one to each 55 to 75 feet of street. On wide streets the standards will be placed opposite, at intervals of from 100 to 125 feet.

The Boulevard Lighting

The main boulevards and thoroughfares are the principal routes for incoming and outgoing traffic, and hence demand lighting that will make it possible to drive an automobile through them at a moderate speed without the use of bright headlights. In these installations 4,000-lumen (400-candle-power, Mazda lamps in a Form 8 Novalux, Polycase glassware will be used, mounted on a King Manufacturing Company's French design standard providing for a height of 13 feet to the light source. The spacing will be approximately 100 feet at

street intersections, increasing to a maximum of 140 feet.

Pennsylvania Avenue is an example of a broad boulevard having a beautiful grass parkway in the center, ornamented with shrubs and flower designs, on either side of which is a paved driveway. There will be a single row of the boulevard type standards placed on the center line of this parkway. There is, however, a section of this boulevard south of Main Street where trolley tracks will be placed in the central parking. There the lighting standards will be installed along the sidewalk curb, for the reason that if the units were mounted on the double-bracket trolley poles in the parking, there would be an objectionable shadow on the street side of the trolley cars, especially when a car stopped to discharge or take on passengers.

The transformer used with these standards will have a tap which will permit the use of a 6,000-lumen (600-candle-power) lamp when increased traffic in certain locations necessitates such a change.

For the secondary residential streets the same standard as that to be used for the boulevard lighting, except that it will be a little shorter, will be employed. It will be equipped with the same lighting unit and a 2,500 - lumen (250 - candle - power) Mazda lamp. The standards will be installed at intervals of from 100 to 150 feet of street.

The main park drives will be equipped with lighting of the boulevard type, and minor roads and walks with standards like those used in the residential districts. Plazas, playgrounds, etc., will be considered from the standpoint of their individual needs and requirements and will be lighted accordingly.

The details of this entire plan have been approved, although its realization in the business district will require the active co-operation of the business men.

When the installation is complete, Lansing will have more than a modern and highly efficient lighting system. On account of the uniformity of the types of standards and lighting units selected, the general appearance of the city will be greatly enhanced. Clearly, it will be a progressive step toward the "city beautiful" and will harmonize completely with the City Plan which was recently developed for Lansing. Furthermore, the plan is

elastic in that it provides for the use of more powerful lamps as the future needs of the city may require.

This briefly outlines the adopted plans for the future lighting of the streets of Lansing. The installation on Pennsylvania Avenue has been completed and is shown in the accompanying illustration. Groups of ten standards each are connected to individual 2.4-kw. transformers which are fed by series street lighting circuits already in service.

A single conductor of boulevard lighting cable for 600 volts service is used. The cable has 1/16-inch varnished cambric insulation surrounded by a lead sheath of 1/16-inch thickness, which in turn is covered with 100-pound jute yarn 5/64-inch thick, thoroughly impregnated with a hot as-

phaltum compound. Every length of cable was tested for five minutes on an alternating electromotive force of 3,000 volts, and a 15-foot sample of each length was subjected to a test of 6,000 volts. This is the specification for what is known as 1,250-volt cable.

Upon the installation of 87 of the 13-foot standards, equipped with 400-candle-power lamps, the cost for labor was \$28.60, material \$81.00, a total of \$109.60 per standard. This includes the standard, lighting unit, underground cable, transformer and their installation, but does not include any charge for the existing series circuits to which the transformers are connected or the constant current transformers at the station. This is considered a moderate cost for so excellent an installation.

The Marking of Historic Sites in Canada

THE proper marking of historic sites is a feature that adds much enjoyment to a motor vacation. The tourist who gets the most out of his summer trip is the one to whom the places he visits have individuality and definite associations, rather than being merely names on cross-roads signboards. Any movement to treat with dignity and respect the places associated with the good and the great of a country or with the events which have shaped the country's history, should be encouraged.

The Department of the Interior of Canada has sought to further such a movement by organizing a competition to secure suitable designs of monuments to which to affix the standard bronze tablet of the Canadian National Parks Commission, bearing the historic data. Commissioner J. B. Harkin reports that three prizes have been awarded. The first of the prize-winning designs is herewith reproduced.

The monuments will be placed on historic sites of national importance that have been recommended by the Historic Sites and Monuments Board. This board acts in an advisory capacity in regard to restoration, preservation and marking of such sites.



DESIGN THAT WON FIRST PRIZE AS A MARKER FOR HISTORIC SITES IN CANADA

The Fallacy of Separate Garbage and Refuse Collection

Abstract of Report of George A. Johnson on the Collection and Disposal System in Boston, Mass.

THE city ordinances of Boston require that the owners, tenants or occupants of buildings shall provide separate receptacles for garbage, ashes and rubbish; that these receptacles shall not be larger than an ordinary flour barrel, nor be filled to within more than four inches from the top thereof; that receptacles containing garbage or ashes and rubbish shall be placed at or near the curbstone on the day of collection, as city employees are not allowed to enter cellars. Water-tight receptacles are required for garbage.

An investigation was made into the question of how completely the city ordinances are obeyed respecting refuse separation. Each sanitary district was studied with reference to the character and distribution of its population. Loads of refuse were taken from representative parts of each district. A total of 32 loads, totaling 64,804 pounds net weight, and representing the alleged ashes of the entire city during the fall season, gave the following result:

COMPOSITION OF ASH COLLECTIONS

FALL SEASON, 1922

| SANITARY DISTRICT Number and Locality | Per Cent Garbage in Ashes |
|--|---------------------------------|
| 1 South Boston..... | 11.3 |
| 2 East Boston..... | 24.1 |
| 3 Charlestown..... | 7.6 |
| 4 Brighton..... | 1.4 |
| 5 West Roxbury..... | 1.1 |
| 6 Dorchester..... | 21.4 |
| 7 Roxbury..... | 2.8 |
| 8-9 Back Bay and South End..... | 19.5 |
| 10 North and West End..... | 42.4 |
| 11 Hyde Park..... | 1.7 |
| Average..... | 14.7 |

A further description of the composition of the ash collections of Boston during this fall season is furnished by the detailed re-

sults of mechanical analysis of the above 32 representative loads as follows:

AVERAGE COMPOSITION OF ASH COLLECTION

FALL SEASON, 1922

| Material | Per Cent of Total |
|-------------------------|----------------------|
| Garbage..... | 14.7 |
| Ashes and dirt..... | 42.8 |
| Rags..... | 2.8 |
| Paper..... | 24.4 |
| Metals..... | 2.5 |
| Tin cans..... | 4.2 |
| Bricks and stones..... | 1.2 |
| Glass and crockery..... | 4.3 |
| Old shoes, leather..... | 0.9 |
| Coal..... | 0.1 |
| Dead animals..... | 0.1 |
| Grass and straw..... | 1.3 |
| Rubber..... | 0.1 |
| Miscellaneous..... | 0.6 |

These figures, representative of the ash collections of the entire city during the fall season of 1922, show how very indifferently are the city ordinances observed as regards separation of refuse. It is true that this is the heaviest fruit and vegetable season, and that the refuse of the winter and spring months undoubtedly would show a lower garbage content in the ash. Certainly the mechanical analysis made in November showed up markedly better, as shown at the bottom of the page.

Notwithstanding the improvement of November results over those for September, the presence of 3 per cent of garbage in the ash collections during November is equivalent to about 20 per cent of the normal garbage content of the combined refuse of Boston. This is not good separation, and ashes and rubbish containing such a high percentage of garbage should not be deposited in public dumps. In the summer months, when the percentage of garbage

RELATIVE COMPOSITION OF ASH COLLECTIONS

| SANITARY DISTRICT Number and Location | Per Cent Garbage in Ashes 1922 | | Per Cent Ashes in Refuse 1922 | |
|--|--------------------------------------|----------|-------------------------------------|----------|
| | September | November | September | November |
| 2 East Boston..... | 24.1 | 3.4 | 27.5 | 70.5 |
| 6 Dorchester..... | 21.4 | 3.1 | 33.9 | 78.2 |
| 7 Roxbury..... | 2.8 | 3.0 | 62.0 | 73.7 |
| 8-9 Back Bay and South End..... | 19.5 | 1.1 | 52.3 | 93.3 |

is far greater, to dispose of refuse so highly charged with garbage is inevitably to invite trouble from fly- and rat-breeding, odor-producing dumps. Fermentation of the garbage-charged refuse deposited in these dumps invites trouble from fires by spontaneous combustion.

The reasons why the people of Boston, in some districts more than in others, do not observe the city ordinances relative to the separation of their refuse, are numerous and understandable. In the first place, even the most intelligent and law-abiding class of people, and in particular their servants, will not consistently obey such rules unless it is convenient for them to do so. Again, so far as can be learned, there is no police cooperation to aid in forcing the observance of these rules. The constable of the Sanitary Division, operating in East Boston, Back Bay and South End, North End and West End, seems to accomplish little in this direction, judging from the results of the mechanical analysis.

Attempted separation of the city's refuse is imperative so long as the Coleman contract* is operative. Any city determining to adopt the practise of reduction for the recovery of grease and tankage from its garbage must impose upon its citizens the

* For disposal of garbage by reduction on Spectacle Island, Boston, Harbor.

CONTRACT COST OF COLLECTION AND DISPOSAL OF ASHES

| DISTRICT Number and Locality | Cost per Ton for 1922 | Cost per Ton for 1921 | Contract Price for 1922 Was Lower Than That for 1921 by: (per cent) |
|--|--------------------------|--------------------------|---|
| | | | |
| 2 East Boston.... | \$0.79 | \$1.32 | 40 |
| 4 Brighton | 1.17 | 2.21 | 48 |
| 5 W. Roxbury.... | 0.78 | 1.11 | 30 |
| 6 Dorchester | 1.05 | 1.75 | 40 |
| 11 Hyde Park..... | 0.56 | 1.06 | 47 |
| Weighted average.... | \$0.91 | \$1.63 | 46 |
| Weighted average 1921 and 1922, \$1.35 | | | |

task of initial separation of their refuse. The chief difficulty in Boston is attributable directly to incomplete separation of the

refuse and to the decision to prolong the disposal of garbage by the reduction method.

Citizens will not observe adequately and consistently the rules necessary for satisfactory separation of their refuse, particularly if there is no well-defined and persistent effort made by the city authorities to enforce the ordinances pertaining to such matters. Competent in-

spection can do much to keep the refuse from being thrown into streets, yards and alleys, but can do little toward dictating the character of materials which shall go into garbage cans and into ash and rubbish receptacles. There is bound to be in some measure a mixture of these materials in the same receptacle.

"The existing collection service in Boston, lacking systematic organization and allowing separate ash and garbage collection, respectively, in the same district, leads to confusion, extravagance and poor service. Lawsuits brought by the collectors themselves are an inevitable heritage of such practise, which, in view of the quite common failure of the people to observe the city ordinances relative to separation of their refuse, results in those contracting for the collection of garbage receiving a mixture of garbage, ashes and rubbish and those contracting for the collection of ashes and rubbish the same or similar character of mixed refuse."

SUMMARY OF REFUSE PRODUCTION DATA SHOWING VARIATION FROM THE AVERAGE

| Sanitary District Number | Average Tons per Month | | | Variation from Average in Any One Month (Per Cent) | | | | | |
|--------------------------------|------------------------|-------------------------|--------------------|---|-------|----------------------|-------|--------------------|-------|
| | Garbage | Ashes and Rubbish | Combined Refuse | Garbage | | Ashes and Rubbish | | Combined Refuse | |
| | | | | Over | Under | Over | Under | Over | Under |
| 1..... | 412 | 2,392 | 2,804 | 57 | 46 | 44 | 30 | 31 | 25 |
| 2..... | 223 | 2,148 | 2,371 | 35 | 17 | 48 | 35 | 43 | 30 |
| 3..... | 161 | 1,177 | 1,338 | 17 | 22 | 36 | 9 | 26 | 20 |
| 4..... | 455 | 2,175 | 2,630 | 25 | 16 | 68 | 44 | 61 | 36 |
| 5..... | 316 | 2,213 | 2,529 | 16 | 17 | 31 | 36 | 28 | 30 |
| 6..... | 1,324 | 6,809 | 8,133 | 25 | 24 | 60 | 61 | 47 | 51 |
| 7..... | 892 | 5,572 | 6,464 | 21 | 8 | 32 | 47 | 28 | 40 |
| 8-9..... | 1,334 | 6,498 | 7,832 | 33 | 23 | 49 | 38 | 41 | 35 |
| 10..... | 611 | 5,167 | 5,778 | 17 | 25 | 15 | 25 | 15 | 31 |
| 11..... | 142 | 672 | 814 | 25 | 23 | 45 | 42 | 36 | 29 |
| Totals and Averages.. | 5,870 | 34,823 | 40,693 | 28 | 22 | 43 | 41 | 36 | 37 |

COST OF COLLECTION OF ASHES AND GARBAGE BY WAGONS, BOSTON, 1922

| District | City or Contract | Ashes | | Garbage | |
|----------|------------------------|--------------------|-----------------------------|--------------------|-----------------------------|
| | | Cost per Ton | Cost per Ton- Mile | Cost per Ton | Cost per Ton- Mile |
| 1 | City | \$2.16 | 0.008 | \$4.46 | 0.040 |
| 2 | Contract .. | 0.93 | 0.017 | 5.13 | 0.130 |
| 3 | City | 2.60 | 0.031 | 3.27 | 0.066 |
| 4 | Contract .. | 1.95 | 0.044 | 3.22 | 0.140 |
| 5 | Contract .. | 1.54 | 0.035 | 4.78 | 0.150 |
| 6 | Contract .. | 1.71 | 0.009 | 2.63 | 0.027 |
| 7 | City | 2.11 | 0.012 | 4.06 | 0.053 |
| 8-9 | City | 2.59 | 0.006 | 2.37 | 0.019 |
| 10 | City | 3.17 | 0.010 | 2.00 | 0.034 |
| 11 | Contract .. | 0.992 | 0.067 | 3.85 | 0.436 |

Probably the worst district in Boston with respect to indifference to systematic separation of refuse, and the non-observance of elementary rules of street sanitation, is the North and West Ends, known as Sanitary District No. 10. East Boston

is another, as are the South End and parts of Dorchester. In a lesser degree all other districts are guilty of the non-observance of the rules of refuse separation, West Roxbury, Brighton and parts of Dorchester functioning more satisfactorily in this regard than any other districts.

It is not the intention to convey the idea that the people of Boston stand preeminent in the matter of non-observance of rules respecting refuse separation. They are no more culpable in this regard than the people of many other cities. The fault lies chiefly in the fallacy of refuse separation as a designed means to an end which imposes a distinct hardship on the population, makes for insanitation, and involves a heavy unnecessary expense for collection.

Some 1923 Street Cleaning Appropriations

IN Pittsburgh, Pa., the appropriations for street cleaning for 1923 total \$663,000. This amount does not include a special fund set up for the removal of snow, which is taken care of separately. In Pittsburgh there are 592 miles of improved streets and 608 miles of unimproved streets. The appropriation takes care of both types.

In Buffalo, N. Y., the appropriation for the fiscal year ending June 30, 1923, includes \$60,000 for block and patrol system cleaning by white wings, \$10,000 for cleaning market places, \$200,000 for cleaning streets, \$25,000 for snow removal, and a \$100,000 bond issue for snow removal. There are about 445 miles of paved streets in Buffalo.

The 1923 appropriations for street cleaning in Cincinnati, Ohio, were \$250,000, with no

special appropriations for snow removal. There are 626½ miles of paved streets.

In the District of Columbia, the appropriation for the fiscal year ending June 30, 1923, was \$375,000. Snow removal may be done under this appropriation, but there has been a special appropriation of \$10,000 made for this purpose. The appropriation for the fiscal year of 1924 is \$400,000 for street cleaning. The total mileage of paved streets is 257.32.

We are indebted to John A. Fugassi, Superintendent, Bureau of Highways and Sewers, Pittsburgh, Pa.; William F. Schwartz, Street Commissioner, Buffalo, N. Y.; Fred Maag, Superintendent, Street Cleaning Department, Cincinnati, Ohio; and Morris Hacker, Supervisor of City Refuse, Washington, D. C., for this information.

Instructions for Banking Boilers

A Bit of Information for the Operators of Municipal Steam Power-Plants

IN general, boilers should not be banked until the load on every boiler in service falls below normal rating. As all coal burned during the banking is a loss, every effort should be made to reduce the draft through the fire bed and setting to a minimum. During the banking period stokers should be turned over occasionally to prevent the fire bed from becoming too porous or honeycombed. These rules form part of the operating code of the Philadelphia Electric Company, from which the following instructions for banking boilers are abstracted:

1. Cut off the forced draft.
2. Stop both the induced and forced draft fans.
3. Cut off the stokers. In case of light fire at the time of banking, let the stoker turn about three revolutions to give a bed of green coal, and repeat this operation approximately every hour during the banking period.
4. Close the damper of the stack draft until the opening is just sufficient to clear the furnace of gases.
5. Close the main feed-water valve to the boiler.

A Sewage Ejector Station at Fort Madison, Iowa

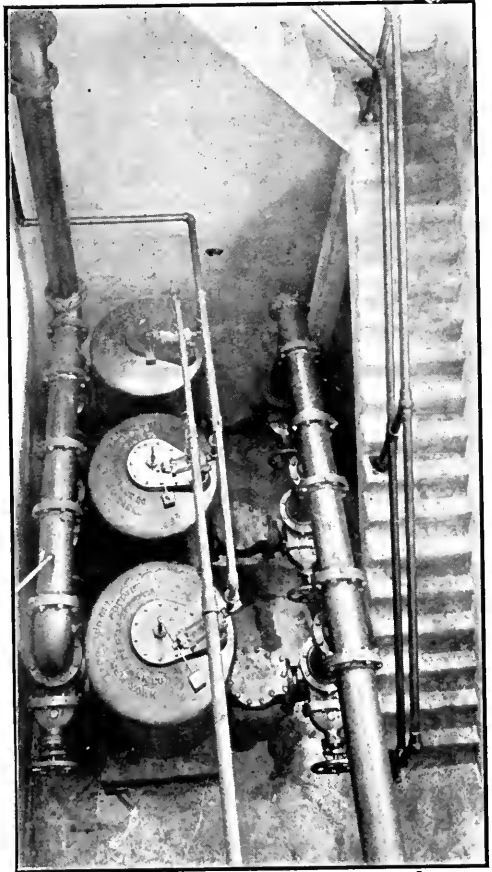
By L. B. Reynolds

Burns & McDonnell Engineering Company, Kansas City, Mo.

THE construction of the Keokuk dam raised the water-level in the Mississippi River at Fort Madison, 24 miles north of the dam, to such an extent that all existing sewer outlets were submerged and facilities for the future sewerage of the city were impaired. The firm of Burns & McDonnell was retained to design an adequate sewer system and determine the damages caused by the Mississippi River Power Company. The reconstructed system has just been completed at a cost of \$400,000, and the city settled the damage suit with the Power Company by accepting \$50,000 as the amount of damages.

The reconstructed system has three gravity outlets and one pumping outlet; the latter carries the sewage from a narrow portion of the city along the river, which is not high enough to permit basement drainage by gravity. The system is so designed that the three gravity outlets can be connected into the low lines by two connections about 20 feet long and one connection about 2,200 feet long.

The pumping-station is located close to the river, opposite the central portion of the city. The relative costs and advantages of centrifugal pumps and ejectors were studied carefully before selecting equipment. The outlet sewer is nearly 14 feet deep at the pumping-station, and in case pumps had been used, at least short storage would have been necessary below the sewer with provision for screening, which would be very expensive on account of the gravel and sand formation and the depth below water-level in the river; besides, any storage basin would allow some deposition of solids, with resulting septic action and production of odors. The trouble and cost of cleaning screens and disposing of screenings was also considered, and the fact that, notwithstanding screen protection, stoppages in the pumps must be expected. These costs and disadvantages were found to more than offset the greater first cost and lower efficiency



SEWAGE EJECTORS AT THE FORT MADISON, IOWA, SEWAGE EJECTOR STATION

of pneumatic ejectors, and the latter were adopted as the cheaper and more reliable equipment for this installation.

The ejector pit is 17 by 11 feet inside and 20 feet deep. Considerable difficulty was encountered during the construction of the ejector pit; the first few feet were clay, but below the formation was coarse gravel and sand, and the infiltration was very great because of the head of water in the river, which was practically 15 feet at the bottom of the pit. Three-inch tongue-and-groove

lumber, 16 feet long, driven with a steam hammer, was first tried, but was abandoned in favor of steel sheet piling 20 feet long. A 6-inch centrifugal pump driven by belt from a traction engine and a 3-inch Nye pulsometer pump were used to keep the water down, and excavation was made by means of a derrick and gas engine hoist and later by a clam-shell. The floor is 18 inches thick and heavily reinforced. A temporary sump was dug and the water held down by continuous pumping while the floor was being poured. The walls are 20 inches thick at the bottom and 15 inches at the top. The ejector pit was so well constructed that a match can be lit anywhere on the wall—because of the dryness of the surface. The pit is at one end of the station, putting all equipment under one roof.

The pumping equipment consists of three ejectors with a capacity of 150 gallons each. Duplicate motor-driven air compressors furnish the air for the ejectors, each compressor being of ample capacity to furnish the air for pumping 200 gallons per minute with a very moderate compressor speed of 150 r.p.m. A moderate speed was specified

in order to secure maximum reliability of service and long life with a minimum of attendance and maintenance. An emergency gasoline engine is provided for driving the compressors in case of power interruptions.

A minimum of attendance is required for this plant, which is as nearly automatic as it can be made; only one or two inspections of an operator per day are needed. No trouble whatever has been experienced with this station since it was placed in operation. The net lift from inlet to outlet is 8 feet, and the discharge line consists of 375 feet of 8-inch cast iron pipe. During actual operation it has been found that 1 kw. hr. is required to lift 1,925 gallons of sewage, indicating an over-all efficiency of between 25 and 30 per cent.

The total cost of the station was approximately \$38,000, including an extra of over \$4,000 for pumping water and extra cost of sheeting and bracing due to water. The station was built by the Layton Construction Company, Muscatine, Iowa, and the equipment was furnished by the Pacific Flush Tank Company, Chicago, Ill.

Chicago's New Sewage Treatment Plant

By George F. Paul

A NEW sewage treatment plant for the Calumet region, Chicago, is now in successful operation. It has been built by the Sanitary District of Chicago at a cost of \$4,500,000, and forms part of the Calumet intercepting sewer system. The sewage which this plant will care for is the dry-weather flow from the area south of 87th Street and from Blue Island to Lake Michigan and the state line. This dry-weather flow is expected to average 75 cubic feet per second. It is now brought to the Calumet pumping-station by means of the intercepting sewer, and there raised by pumps and sent to the new treatment works through a 5½- and a 7½-foot horseshoe conduit built in tunnels. After it has been treated, it returns to the pumping-station by another concrete conduit that is built integral with the first two mentioned, sent to the Sag Canal by a 16 x 16-foot

horseshoe concrete outfall, or at time of storm direct to the Calumet River, through a 9-foot concrete conduit.

The sewage treatment plant consists of two duplicate units, each composed of two batteries of 16 tanks, and covers an area 227 x 297 feet. Between the units are drying-beds for the sludge, which is brought from the sludge hoppers by means of air and spiral riveted piping, discharging through a concrete trough. The structure has in all 30 Imhoff tanks, each 103½ feet long by 31½ feet wide, with a total depth of 26.4 feet, and a settling capacity of 29,000 cubic feet. These tanks are so designed that they can readily be converted into aeration tanks should the engineers desire to change the plant to an activated sludge installation at any later date.

The sludge beds are 66 feet long and vary from 17 feet 7 inches to 20 feet 3 inches in



IMHOFF TANKS OF THE CALUMET SEWAGE DISPOSAL PLANT UNDER CONSTRUCTION, SHOWING BOTTOM HOPPERS, STEEL FORMS AT LEFT AND CHUTE AT RIGHT

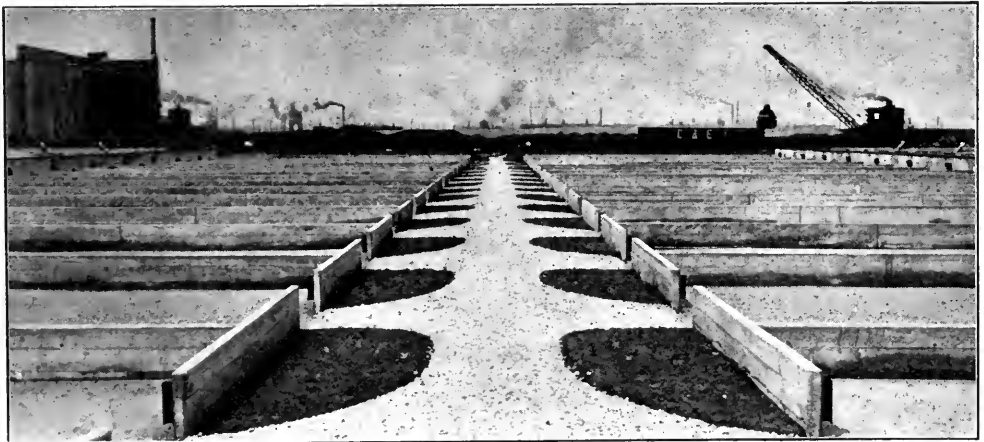
width. They are underdrained by a 12-inch tile main drain and two 4-inch lateral drains. The filtering material varies in depth from 12 to 19 inches. It is made up of a bottom layer of broken stone or gravel 4 to 10 inches thick, on which is placed 4 inches of $\frac{1}{4}$ - to $\frac{3}{8}$ -inch broken stone and 3 inches of $\frac{1}{16}$ - to $\frac{1}{4}$ -inch sand. Then comes a top layer of fine sand $1\frac{1}{2}$ inches thick. To remove the sludge, industrial cars operating over a 24-inch-gage railway are used, dumping at present on the vacant area.

The present work included about 150,000 cubic yards of clay excavation. This was carried out by two draglines mounted on caterpillars, each with a 2-cubic-yard bucket on a 70-foot boom. Each of these handled as much as 1,000 cubic yards of material each 8 hours.

The sewage plant structure contains 30,000 cubic yards of concrete. This may be

regarded as superstructure, and consequently there was an opportunity for the builders, the T. J. Forschner Contracting Company, Chicago, Ill., to use chuting equipment. To take advantage of the situation, the contractors devised a combination of line chute and counterweight. The chuting plant for each unit consisted of a wooden tower 150 feet high, from which two lines of chutes were supplied.

Sand and gravel were received in standard-gage cars and were then handled by a locomotive crane operating a clam-shell into a 3-compartment bin of 200 yards capacity. The material was carried by gravity to a 1-cubic-yard motor-driven mixer. After the mixture had revolved one minute, it was dumped into a steel auxiliary hopper and sent into the excavator bucket. The auxiliary hopper proved a remarkable saving in getting rid of delays in charging the hoist buckets.



A VIEW OF THE SLUDGE BEDS OF THE CALUMET SEWAGE TREATMENT PLANT, CHICAGO, LOOKING NORTH

The Rate of Growth of Shade Trees

TREES do not grow at the same rate throughout their life. They usually grow slowly at first and then very rapidly between the tenth and fortieth years, after which time the rate of growth may fall off gradually. The average rate of growth of shade trees is about $\frac{1}{2}$ -inch in diameter each year after the tree reaches the size of about 6 inches. Roadside trees and trees growing in the open grow much faster in diameter than those in the forest, although the height growth is usually less. This is due to the fact that trees growing in the open develop larger crowns and so manufacture more food, resulting in wide layers of wood each year. Trees growing in the forest are usually crowded and are forced to grow taller in order to secure the light necessary for growth. A rapid diameter growth does not take place until they have reached sufficient height or have thinned each other out, so as to allow room for crown development.

Trees obtain the greater part of their food from the air through the leaves, and diameter growth is therefore in direct proportion to the size of the crown and the number of leaves. A large-crowned tree in the open will grow many times as fast in diameter as a small-crowned, forest-grown tree of the same species. Few studies have been made of the rate of growth of trees in the open. We have, however, a record of a considerable number of roadside trees and some measurements of their rate of growth.

There is a great difference in the rate of growth of the same species, a difference which is more pronounced in the open than in the forest, as there are greater opportunities for individual development. Elms, for instance, often show a great difference in diameter at the same age; under favorable conditions they may reach a diameter of 20 inches in 40 years, and again under less favorable conditions they may be only 12 inches in diameter in the same length of time. In discussing the age of a tree I mean the total age of the tree by years, and not the number of years since the sapling was planted on the roadside.

If 3-inch saplings are used for planting,

they may be ten or more years old at the time. It is a mistake to use too large planting stock. If 3-inch trees are used, they must be heavily headed back to counterbalance the loss of roots, and the tree will lose its typical form. An elm may recover from such heading back and become a tall, graceful tree, but maples and many other trees will have a changed branching habit and a heavy, low crown. Also, if large planting stock is used, the heavy trimming back of roots and crown will cause growth to become very slow for a number of years, while if small planting stock is used—trees 6 or 8 feet tall—growth will be arrested only for a year or two at the most. Heavy trimming back will be unnecessary and the tree will soon surpass the larger sapling in size and rate of growth. Very small planting stock is objectionable because it is liable to be crowded out by weeds or injured by trampling or some other cause, and for this reason there is little use in planting seed where a tree is desired.

Most trees grow very slowly during the first few years of their life, and for the first year after planting there is very little or no growth in height, the trees putting their efforts into root development. The cost of using large stock is very great. In the case of black walnut, two or three-year-old seedlings are a good size to use. If the nuts are planted along the roadside, it is very probable that they will be dug out by squirrels, and the results are usually unsatisfactory. It is difficult to move black walnuts safely when they are more than three years old, owing to their deep tap-roots. Red oak or white ash transplants 6 or 7 years old should be 6 to 8 feet high and are a good size for roadside planting. They can be obtained quite cheaply. The hard maples grow very slowly when small, and 5-year old trees would be only about 4 feet tall. Trees from 6 to 8 feet tall are a good size to use and will be from 3 to 10 years old, depending upon the species.

ACKNOWLEDGMENT.—From a paper read by A. K. Chittenden, Professor of Forestry, Michigan Agricultural College, at the Annual Conference on Highway Engineering at the University of Michigan.

Bathing-Suits and Bathing-Beach Regulations

TO what extent does sound public policy require restrictions as to kinds of bathing-suits permitted on public beaches? What other regulations are necessary for the proper control of bathing facilities? What rates are charged at municipal beaches?

To answer these questions, the following compilation has been prepared from data furnished to THE AMERICAN CITY by city clerks or recreation departments of the several cities mentioned.

Typical of carefully considered regulations are those of Cleveland, Ohio, received from G. A. Ruetenik, Director of Parks and Public Property, and reproduced in the adjoining column. As to bathing-suits, the Chicago regulations, received from Walter Wright, Secretary, Bureau of Parks, Playgrounds and Beaches, are practically identical with the Cleveland regulations.

Several cities report success in establishing good taste in bathing-costumes without definite restrictions such as those of Cleveland and Chicago. For example, P. V. Gahan, Superintendent, Board of Recreation, Bridgeport, Conn., writes:

"No regulations on suits. We find the public fairly sane on this matter, and prescribing the inches above the knee, etc., is all tommy-rot. However, we do not consider underclothes as bathing-suits. Some of our newly arrived bathers from the other side spring this on us from time to time and we run them in. Many thousands of bathers come down in their suits in cars instead of using bath-houses. Dressing in cars prohibited. The bathers put on rain-coats to and from the park to their homes."

From Granville R. Lee, Supervisor and Secretary, Recreation Commission, Portland, Maine, comes this comment:

"As a rule, no fault can be found with the bathing-suits of those who frequent the beach. If a bather should appear on the beach in a suit considered by the attendants as immodest, one of the attendants calls the person's attention to the fact, and the offender is told to put on a suitable bathing-suit or leave the beach, but I believe that has happened only once in the seven years that the beach has been under the supervision of the Recreation Commission."

The experience of Newport, R. I., is thus reported by C. W. R. Callahan, Deputy City Clerk:

"As to bathing-costumes, the policy of the management has been to allow the good taste of its patrons to govern this subject. In very few instances, where an objectionable costume has been worn by a woman, it has only been necessary to have her quietly spoken to by one of the women police in plain clothes. The men's costumes, of course, are not varied.

Regulations

BATHING BEACHES AND POOLS CITY OF CLEVELAND

1. Bathing-beaches will be open week days 10 A. M. to 9:30 P. M. Holidays and Sundays 8:30 A. M. to 9:30 P. M.
2. **LADIES' COSTUMES**—Blouse and bloomer suits may be worn, with or without skirts, with or without stockings, provided the blouse has $\frac{3}{4}$ -arm sleeve or close-fitting armholes, and provided bloomers are full and not shorter than four inches above the knee. Jersey knit suits may be worn with or without stockings, provided the suit has skirt or skirt effect, that $\frac{3}{4}$ -arm sleeves are used, or close-fitting armholes, and trunks not shorter than four inches above the knee. The bottom of the skirt must not be shorter than two inches above the bottom of the trunks.
All white or flesh-colored suits are prohibited. Any suit that exposes the chest lower than a line drawn on a level with the armpits must not be worn.
3. **MEN'S COSTUMES**—Men's suits must have a skirt effect or skirt worn outside of trunks. The trunks must not be shorter than four inches above the knee, and the skirt must not be shorter than two inches above the bottom of the trunks.
All white or flesh-colored suits are prohibited. Any suit that exposes the chest lower than a line drawn on a level with the armpits must not be worn.
4. Persons not in bathing-costumes are not allowed to loiter on the beach in front of the bath-house.
5. Smoking not allowed in bathing-pavilion. Bathers in bathing-costumes will not be allowed in the parks or at the refreshment stands in the bathing-pavilion unless provided with an outer garment of sufficient length to conceal bathing-suit.
6. Life guards will be distinguished by "Life Guard" in white block letters.
7. Bathers are not allowed on boats used by life guards.
8. Profanity or indecent language strictly prohibited.
9. Life guards must preserve order at all times and deliver violators of these regulations to the police.
10. Employees of the bathing-beaches must at all times be courteous to the public, answer questions cheerfully and endeavor in every way to be helpful in serving the public.
11. Employees shall not loiter about the bathing-pavilion of the park when off duty. They must not smoke during working hours. Any violation of this rule will mean instant dismissal.
12. All diving must be from the diving platform.

Almost all of them are the ordinary bathing-jersey, and the customary blue trunks, supported by a belt."

Atlantic City, N. J., adopted last year an ordinance preventing bathers under certain conditions from using the highways or public conveyances unless an outer garment is also worn. This ordinance, received from Joseph A. McNamee, City Clerk, provides:

"That in that section of Atlantic City included between Vermont and California Avenues and Mediterranean Avenue and the inner line of the boardwalk it shall be unlawful for any person to walk upon the public sidewalks, streets or highways or ride upon or in any street railway car or other public conveyance, including jitneys, clothed in a bathing-suit or bathing-garment unless such suit or garment is covered with a cloak, coat or other covering extending from the shoulders to below the knees, so that the bathing-suit or bathing-garment worn by such person is hidden from view and will not come in contact with the wearing apparel of other persons on such highways or street railway cars or other public conveyance, including jitneys."

The Guarding and Lighting of Beaches

In Des Moines, J. G. Rounds, Superintendent, Department of Parks and Public Property, writes that life-guards are provided on the river or other places where there is a possibility of drowning. Police protection is also provided, and the beaches are lighted up to eleven o'clock, the closing hour.

St. Paul reports, through Herman C. Wenzel, Commissioner of Parks, Playgrounds and Public Buildings, as follows:

"We have a long festoon lighting system extending 600 feet at the outer edge of the enclosed area and arc lights on the shore to light up the bathing-space quite brilliantly. We have a policeman in attendance at all times during bathing-hours. His duties are to take care of the interior of the bath-house and of the conduct of the patrons on the beach. Our beach will accommodate from 3,000 to 5,000 people at one time. It is equipped with three diving-towers, a floating diving-dock, a stationary dock, and a toboggan-slide and water-chute. The beach is located near the outlet of the lake, so the water changes rapidly and there is no

danger of having polluted water at any time during the summer."

In Chicago the municipal bathing-beaches are lighted for night bathing by batteries of flood lights placed on high towers at opposite ends of the beach. Both policemen and policewomen are detailed at all the city beaches during the bathing-season.

Newport claims the credit of having been the first city in the country to have women police at a bathing-beach. The beaches are patrolled by both men and women police, some in uniform and others in ordinary summer apparel. Adequate lighting is provided at night.

Three miles of the Bridgeport beach are patrolled at high tide by guards in boats. Flood lights are used to light the beach and floats at night.

Charges at Municipal Bathing Pavilions

In Cleveland the following schedule of prices is in effect:

| | Cents |
|---------------------------|-------|
| Room, suit and towel..... | 25 |
| Room and suit | 20 |
| Room and towel | 15 |
| Room only | 10 |
| Cap | 20 |
| Stockings | 15 |
| Hair-net | 10 |

At the public bathing-beaches of Des Moines the service is free to persons who furnish their own bathing-suits and towels. If the city furnishes these, there is a charge of 10 cents for a towel, 15 cents for a bathing-suit, and 10 cents for checking clothing.

In St. Paul the charges are 10 cents for the rental of a suit, 5 cents for a towel, 5 cents for a locker, and 5 cents for checking. Commissioner Wenzel says: "We use the one-piece bathing-suit with the half-skirt; this makes a uniform suit for all patrons of the beach."

The charge at the Bridgeport bathing-pavilion is 10 cents for adults; boys and girls under 15 years of age are admitted free. The bathers furnish their own towels and suits; the city furnishes showers and lockers, and checks valuables free of charge.

*"Play for grown people is recreation—the renewal of life.
For children it is growth—the gaining of life."*—JOSEPH LEE.

The Ventilation of Schoolrooms

A Resumé of the Results of the Four Years' Research Conducted by the
New York State Commission on Ventilation

By George T. Palmer, Dr. P. H.

Director of Research, American Child Health Association; Formerly Chief of Investigating
Staff, New York State Commission on Ventilation

SCHOOLROOM ventilation is a controversial topic. Few health matters elicit such a wide diversity of opinion. The last thirty years have been marked by an increasing use of the mechanical blower and by the addition of other equipment more extensive and more complicated. Strangely enough, this period has also witnessed the more extended use of the open-air and open-window schoolroom designed especially for the child with incipient tuberculosis, cardiac cases and the malnourished. For the well children the complex; for sick children the simple!

What is a desirable air condition in a schoolroom? What temperature is best? Should the air be moistened? Is a positive circulation with large volumes of air necessary? Where should air be admitted to the room? Where removed?

These questions and more are uppermost; but if the inquisitive person sought an answer by visiting school buildings, he would be completely baffled, for he would find every conceivable method in actual use.

Some strong remarks have been uttered and printed about the unhealthy condition of schoolroom air. A Chicago school principal has said, "We are trying to educate children in air three times as dry as that which kills the hardiest cactus God ever permitted to start on the most neglected portion of His footstool." Others have made feeling remarks about "canned air," the poisonous substances in the exhaled breath, the glories of fresh, pure air directly from outdoors, etc.

Is the situation serious? Is schoolroom air itself responsible for nervousness and headaches and colds? There must be some way to get at the truth of these matters, and some ways of ventilating schoolrooms must surely be better than others.

It was in an effort to reconcile these differences and clear away this confusion that

the New York Association for Improving the Condition of the Poor, with the consent of a generous donor of funds for public health enlightenment, Mrs. Elizabeth Milbank Anderson, decided to set aside the sum of \$75,000 for a careful research on the relation between ventilation and the welfare of school children. This was in 1913. Accordingly, a group of six men were selected to administer this fund. The state of New York became interested, and the Governor appointed this same group to serve as the New York State Commission on Ventilation.*

Characteristics of Various Ventilation Systems

Six main types of ventilation were studied by the Commission, namely:

1. Window ventilation without exhaust ducts
2. Window ventilation with gravity exhaust
3. Window ventilation with fan exhaust
4. Plenum fan ventilation with gravity exhaust
5. Plenum fan ventilation with fan exhaust
6. Fan ventilation using recirculated air

Window ventilation without gravity exhaust the Commission found to be unsatisfactory. This type of room was characterized by highly variable temperature, cold floors, poor aeration, and the frequent

*The personnel of this Commission is of more than passing interest, for it represented, not the viewpoint of a single professional group, but a composite of various scientific fields vitally interested in the question. The membership included: Dr. James Alexander Miller, representing the medical profession; D. D. Kimball, later president of the American Society of Heating and Ventilating Engineers; Dr. Frederic S. Lee, physiologist, of the College of Physicians and Surgeons, Columbia University; Professor Earle B. Phelps, chemist, of the United States Public Health Service; Professor Edward L. Thorndike, psychologist, of Columbia University, and Professor C.-E. A. Winslow, of the Yale University School of Public Health.

The Commission carried on its studies in New York City and vicinity over a period of four years, and its completed report, delayed by the war, has just been published by E. P. Dutton and Company of New York. See page 633 in this issue.

presence of odor. It is only in mild weather that conditions become comfortable. In cold weather this room lacks circulation, the air entering from the windows into a blind pocket. The use of muslin window screens was found not to aid, but to be an additional hindrance.

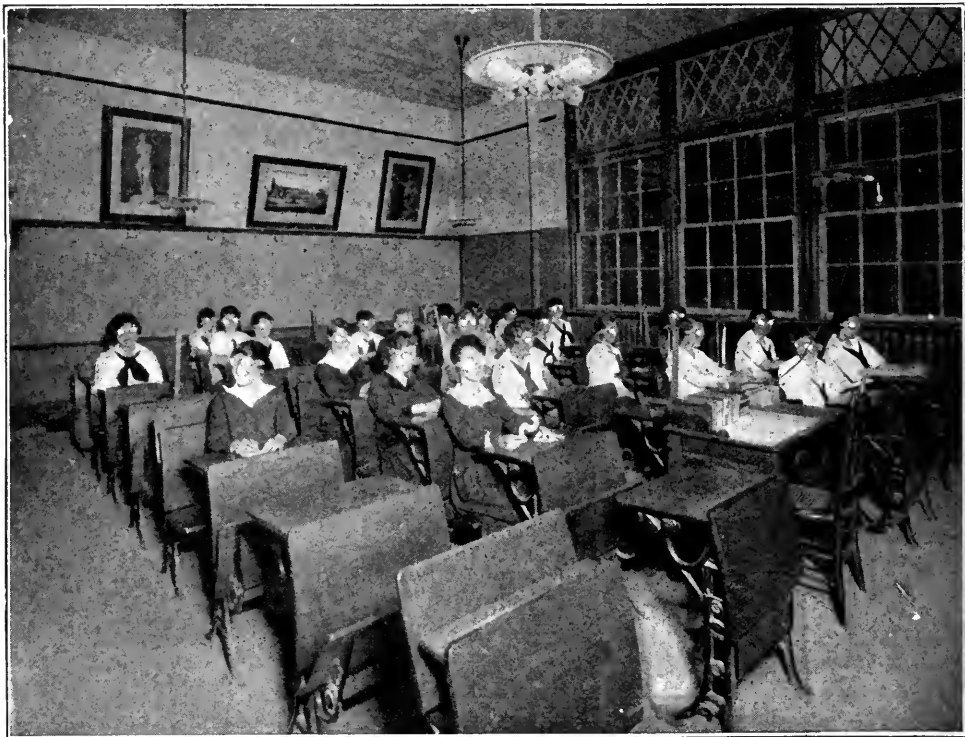
The addition of a gravity exhaust duct to the window-ventilated room effected a marked improvement. Essential equipment for the success of this method also includes slanting deflectors at the windows and direct radiation beneath the windows and extending across the full width of the windows. The Commission concludes "that this system of ventilation can be used under a wide variety of weather conditions with excellent results so far as the comfort of the occupants is concerned." There is lessened aeration in this type of room, and carbon dioxide is from one to three parts higher than in fan-ventilated rooms. Lower temperatures, from 65 to 67, can be comfortably withstood, and the general sensations produced upon the occupants seemed to be the most agreeable of any method studied.

Seemingly, the combination of window ventilation with fan exhaust would prove better than the preceding method, but this was not the case. Inequalities of temperature and draughtiness were common. The positive suction caused short circuiting of air-flow from corridor doorways, and marked differences were noted in portions of the same room.

With the plenum fan and gravity exhaust, a method now so commonly in use, the Commission found it possible to secure very satisfactory results in a plant properly installed and properly operated. This method gives excellent aeration with resulting low carbon dioxide but with temperatures slightly higher than that found comfortable in window-ventilated rooms. The same conclusions would naturally apply to the combination of the plenum fan with fan exhaust.

Recirculated Air

The practise of recirculating the same air with slight addition of outside air the Commission found to be most promising from the standpoint of cost. An appreciable



BLINDFOLDED AND EARPLUGGED STUDENTS IN THE WADLEIGH HIGH SCHOOL, NEW YORK CITY, RECORDING THEIR SENSATIONS IN A VENTILATION TEST

saving in fuel resulted. From the esthetic standpoint, however, many objections were raised. It was quite impossible to keep down odor under these conditions, and the washing of the air before its return to the room appeared to accentuate the odor rather than to remove it. Even the addition of ozone was ineffective in eliminating odor. In fact, ozone seemed to combine with the existing odor in such a manner as to produce an effect not at all pleasant.

The room with recirculated air, as contrasted with window- and fan-ventilated rooms, seemed to the visitor and to the occupants distinctly inferior. If such were the result under careful and expert supervision, it seems highly improbable that the method would meet with favor in the hands of the ordinary janitor. It is only with buildings of loose construction or with a very limited occupancy that this method seems practicable.

On the other hand, it may be stated that no evidence developed which would lead one to believe that recirculated air affected the health or the mental capabilities of the pupils.

Dry Air Not Injurious

During the course of its investigation the Commission made some most interesting discoveries which have a direct bearing on the causes of discomfort in schoolrooms. Much has been written of the dryness of schoolroom air, and this has been attributed to the low relative humidity. To correct this, humidification has been introduced, especially in connection with the plenum fan system.

A most important distinction exists between dryness and "dryiness." Dryness we may interpret as the presence of but small amounts of moisture in the air. Both absolute and relative humidity are indices of dryness. The sensation of dryness, however, is influenced less by the actual dryness of the air than by its drying capacity. Clothes hung out on a windy day will dry more rapidly than on a still day. In other words, it is the air *motion* which is mainly responsible for drying. This is exemplified in the schoolroom.

The assertion has often been made that dryness is responsible for innumerable ills—dryness in this connection being used synonymously with low relative humidity. There is nothing in the Commission's re-

sults to substantiate this view. The Commission concludes, as between schoolrooms with approximately equal temperatures, but one with a relative humidity of 42.3 per cent and the other with a relative humidity of 28.7 per cent, that there is:

1. No significant difference in their effects on physical development or physical defects
2. No significant difference in mental progress
3. An excess of respiratory affections in the humid room, a result which may possibly have been accidental and due to factors foreign to the conditions of this experiment

Freshness and Stiffness

It was brought out in the study that the sensation termed "freshness" is a function of temperature. The warmer the room, the less the number of votes of freshness.

"Stiffness" is a much-used word commonly understood as denoting "bad air" or the air of a crowded room. It has been possible to throw further light on this term. Stiffness is found to be a function of temperature, pure and simple. It is a significant term naturally suggested by the effect of a diminished breathing space caused by turbinates enlarged by heat. Stiffness is not due to carbon dioxide, nor is it due to dust.

Respiratory Affections

To check the results on the prevalence of respiratory illness found from a study of a few rooms, a more elaborate study was carried on in conjunction with the Bureau of Child Hygiene of the New York City Department of Health. This covered about 5,000 children divided between two school terms, 58 schools being represented the first, and 76 the second, term.

Three types of rooms were observed. Type A being a cold, window-ventilated room (with gravity exhaust) housing normal children; Type B, a cool window-ventilated room (with gravity exhaust); and Type C, the usual plenum fan-ventilated room as found in New York City schools. The difference in respiratory sickness between types A and B is negligible in spite of a marked difference in temperature. As between B and C, however, this is an appreciable difference, mathematically very suggestive if not significant, and yet the temperature difference is but two degrees. Colds and allied affections were most prevalent not in the really cold (59°), window-

ventilated rooms, as one might expect, but in the warmer fan-ventilated rooms—and this in spite of the fact that the window-ventilated rooms were appreciably more congested than Type C.

Standards of Ventilation for the Schoolroom

It will be evident from these studies that changes should be made in our existing standards of ventilation. There can be no definitely fixed values which may be singled out as the best. Standards must be stated as a range of acceptable conditions. Outdoor conditions varying from day to day cause the body to react differently to the same air conditions indoors.

Optimum conditions for comfort have a wide range as follows:

| | |
|--|-------------------|
| Temperature °F..... | 65.5 to 71.5 |
| Relative humidity..... | 19 to 61 per cent |
| Floor temperature..... | 65 to 70 |
| Total "H," kata-thermometer..... | 26.5 to 19.0 |
| Carbon dioxide (parts per 10,000)..... | 5.0 to 11.0 |

Probably one of the reasons for unfavorable criticism of a fan-ventilated room has been its rigidity, its resistance to alterations to meet the comfort of occupants. In the window-room conditions are more readily altered. Many janitors have made lives miserable for teachers and pupils by insisting that windows be kept closed in fan-ventilated rooms. Deprived of this escape from overheating, the occupants have had to grit their teeth and stand it. In the later types of fan ventilation with individual ducts to each room and thermostats in each room controlling the air temperature, conditions are better, and even the opening of windows does not unbalance the flow to other rooms.

It seems highly desirable that there should be opportunity of adjustment of air conditions within each individual room. This involves the privileges of opening windows and the presence of a readily accessible hand control valve on the direct radiation in addition to the thermostatically controlled valves if such are also provided.

It is also quite evident that the air flow standard of 30 cubic feet per minute per person should be reduced and the course of air flow should be upward and over the upper levels of the room instead of in the immediate region of occupants. This will permit lower temperatures without chilling draughts.

Conclusions

One of the outstanding features of the Commission's work has been the disclosing of evidence that window ventilation with gravity exhaust has attractive possibilities which have been overlooked.

Either window ventilation with gravity exhaust or plenum fan ventilation—if the plant be properly designed and operated—yields generally satisfactory results from the standpoint of the air conditions in the average schoolroom. The main difference in the two lies in the fact that the air of the fan-ventilated room is likely to be about 2°F higher, and more uniform in temperature, and that the air movement in this method is considerably greater. We may quote some of the conclusions:

"We find that on the whole, other things being equal, the window-ventilated room at 67°F is somewhat more comfortable than the fan-ventilated room at 69°F."

"We find that the window-ventilated room at 67°F is characterized by materially lower incidence of respiratory disease than the fan-ventilated room at 69°F."

"So far as cost is concerned, we have made no detailed investigation. It seems reasonably certain, however, that the cost of extra radiation and window-boards in the window-ventilated room would be more than balanced by the ducts and fans required in the plenum method, and from the standpoint of operation the lesser aeration in the window-ventilated room must certainly imply a substantial diminution in coal consumption."

"In general, therefore, we are forced to conclude that window ventilation with ample direct radiation, window deflectors and adequate gravity exhaust, seems the most generally promising method for the ventilation of the classroom where local conditions permit its use."

The Commission advises against the adoption of any one method without special study of the individual requirements. In badly congested districts, with odor, dust and noise prominent, it will be inconvenient to depend on open windows, and the use of the plenum system will be indicated. Furthermore, the suitability of window ventilation with gravity exhaust for the school classroom must not be interpreted as meaning that this method will be satisfactory for all types of enclosures. In crowded auditoria, theaters, factories and similar places mechanical ventilation is likely to supply the only adequate solution.

The thermometer, the Commission states, is the most important article of ventilation equipment.

The Equipment of a Municipal Supply Yard



Methods and Forms Used in the General Supply Yard of the New Orleans
Sewerage and Water Board

By John T. Eastwood

Principal Assistant Engineer, Sewerage and Water Board, New Orleans, La.

THE general supply yard of the New Orleans Sewerage and Water Board, known as the Washington Avenue yard, is used for the storage and distribution of materials and supplies used in the construction and maintenance of the sewer, water and drainage systems. The clerical force at the yard handles the requisitions, return receipts, bills, shop reports, etc., in connection with the receipt and distribution of material and the general operation of the yard. The machine, blacksmith, wheelwright and automobile repair shops make the necessary repairs to vehicles, tools, equipment and articles in stock, manufacture repair parts, tools, vehicles and pumps, and shoe the mules.

The force employed at the yard includes in the office one head clerk, one inventory clerk, one bill clerk, one stenographer, one assistant stenographer, one messenger, and a janitor. In the yard itself there are one foreman, and crane operator, twelve to twenty laborers, one day watchman and a night watchman. In the warehouse are one clerk and three laborers, in the stable one stableman with one or two laborers and one night watchman. The shop has one foreman, three machinists and two helpers, four blacksmiths and five helpers, two wheelwrights, two to six carpenters and one to three helpers, one gasoline pump mechanic, one valve and hydrant repairer

and one helper, one tool sharpener, one painter, one electrician and two general helpers. The garage has one foreman, two to three automobile mechanics with four to six helpers, and one automobile trimmer.

The equipment of the yard includes a storage bin for sand, gravel, shells, etc., which was completed and put into operation during 1921. This bin has three compartments, each with a capacity of 100 cubic yards.

An average of 31 head of stock is kept at the yard, with 30 mule-drawn and 80 automotive vehicles. The mule-drawn vehicles include eight double-top spring wagons, one single-top spring wagon, three double open spring wagons, one single open spring wagon, two pipe wagons, four lumber wagons, six dump-carts and five 8-wheel log wagons. All these are operated from the Washington Avenue yard, as are also the following motor-driven vehicles: three 3-ton trucks, eleven 2-ton trucks, seven 1-ton trucks, nine tractor trailers with wagon bodies, one passenger car and one 4-wheel trailer with two 1-yard side dump buckets. Of the other automobiles, thirty-nine were operated from the office building garage and six from the various pumping-stations and power-houses.

In the yard for general use are one 20-ton Industrial steam crane; one 15-ton Ohio locomotive crane; one 10-ton Ohio locomotive

[illegible]

FORMS USED IN SUPPLY YARD OF SEWERAGE AND WATER BOARD OF NEW ORLEANS, LA.

1. Pay-roll sheet starting Friday A.M., closing Thursday P.M., paid Saturdays. 2. Daily report from Yard to Sewer and Water House Connection Department to keep the Department advised as to exact situation with reference to material used, stock on hand, etc. 3. Daily report of goods received in yard, and sent to main office and accounting department. 4. Report of materials received in car-load lots. 5. Inventory card covering each item of stock, posted daily. 6. Automobile tire record from purchase to final disposition. 7. Gas ticket used in issuing gas to all motor-driven vehicles, signed by driver and garage attendant. On back of this ticket is noted speedometer reading for purpose of check on gas consumption of each individual car. 8. Summary of merchandise requisitioned and returned for information of accounting department. 9. Inventory sheet. 10. Daily shop report, crediting shop with number of completed jobs, labor and material, and account to which charged.

FORMS USED IN SUPPLY YARD OF SEWERAGE AND WATER BOARD OF NEW ORLEANS, LA.

11. Accident report, personal or property. 12. Form used for ordering supplies for stock through main office. 13. Requisition used by foremen in various departments for drawing supplies from the yard for use in work. 14. "Return"—for returning any materials, tools and supplies not used after having been drawn out of yard; gives account charged, credit for goods not used. 15. Car record, oil and grease report, etc., showing departure and arrival of each car, lubricating oil, grease, battery examination and attention and gas issued; gives tank readings at the opening and close of day and is sent to main office and checked daily. 16. Form for ordering materials and supplies through purchasing department. 17. Time card on which is outlined the distribution of individual time. 18. Complaint card for auto repairs, outlining nature of trouble, material and time consumed, making repairs or adjustments, etc., for minor jobs. 19. Complaint card used on large repairs or general overhauling for motor trucks and automobiles. 20. Time ticket covering operation of team, trucks, autos, etc.

tive crane; an Austin traction excavator; one Carson-Trainor trench machine, complete; one Lidgerwood cableway, complete; three pile drivers, complete; one land dredge, complete; one floating dredge, complete; one No. 4, 6-inch and one No. 5, 8-inch Emerson steam pump; one No. 2 Schramm gasoline air compressor and painting machine; one 8-inch centrifugal gasoline pump; one 4-inch quadruple diaphragm gasoline pump; one 3-inch duplex diaphragm gasoline pump; eighteen 4-inch single diaphragm gasoline pumps; one 3-inch single diaphragm gasoline pump; one 15-cubic-foot Ransome concrete mixer; one small Packard concrete mixer; one 60-horse-power horizontal boiler (now utilized in heating plant at yard); one 25-horse-power horizontal boiler equipped with two 9-inch Westinghouse air compressors.

The machine shop and garage contains the following equipment for handling the general repair and maintenance work: one 27-inch lathe, one 20-inch lathe, one 16-inch lathe, one 13-inch lathe, one 15-inch shaper, one pipe and bolt machine (up to 2 inches), two double emery tool sharpeners, one power hack-saw, one 24-inch power drill press, one 16-inch power drill press, one 24-inch sizer and wood planer, one 24-inch power band-saw, one 18-inch circular bench saw, one harness machine, one small sewing-machine, one 10-horse-power electric motor, one 7½-horse-power electric

motor, one 5-horse-power electric motor, one 15-horse-power horizontal gas engine, one vulcanizer with gas burner, one Weaver hoist, one 20-ton Weaver press.

In the blacksmith shop are four blacksmith forges, four ¼-horse-power motors for operating the forges, four large anvils, one tire shrinker, and one tire roller.

The stables are equipped with a motor-driven feed crusher and hay cutter and a trolley system for expeditiously handling feed. The machinery of the yard is all electrically operated with current from the Board's power-house. The following carloads of material were received and unloaded in the yard during one year:

| | |
|------------------------------------|-----------|
| Terra cotta pipe and specials..... | 59 |
| Cast iron pipe and specials..... | 233 |
| Sand | 31 |
| Cement | 51 |
| Brick | 37 |
| Gravel | 33 |
| Meter boxes and service boxes..... | 3 |
| Lead pipe and pig lead..... | 6 |
| Clam-shells | 9 |
| Lumber | 4 |
| Coal | 5 |
| Steel rods | 1 |
| Hydrants, valves and parts..... | 3 |
| | <hr/> 475 |

MISCELLANEOUS YARD ACTIVITIES DURING 1921

| | |
|--------------------------------------|--------|
| Team and hand deliveries..... | 3,962 |
| Requisitions honored..... | 17,238 |
| Return receipts..... | 2,354 |
| Exchange receipts..... | 1,828 |
| Daily reports of goods received..... | 683 |
| Jobs completed in shops..... | 4,964 |
| Articles manufactured in shops..... | 2,458 |

William P. Padel is general foreman in charge of the Washington Avenue yard.

Fire-Fighting Equipment Fifty Years Later

THE fire department of the city of Boston which was called upon to fight the devastating conflagration of November 9, 1872, consisted of twenty-one engine companies, each having a hose reel or jumper, the steamers being of small capacity, ten hose companies, seven hook and ladder companies, and three extinguisher or chemical companies. Of the twenty-one steamers in service, six were located in the city proper, three in East Boston, three in South Boston, three in Roxbury and six in Dorchester. Of the seven hook and ladder carriages, only two were in the city proper.

Fifty years later the fire-fighting equipment consisted of fifty pumping engines, three fireboats, thirty ladder trucks, three water-towers, one chemical company and one rescue company. In addition, the department maintains a good percentage of reserve apparatus in first-class condition ready for any emergency. Prac-

tically 85 per cent of this equipment is motorized. A motor pumping engine of to-day has approximately the relative value of two of the steam fire engines of fifty years ago.

In 1872, the fire department was severely handicapped by an epidemic of a horse disease known as epizootic, making it necessary to draw several of the pieces of apparatus to the scene of the Boston fire by hand. It required about two hours to concentrate the total force of the department at any given point in the city at that time. To-day with motor apparatus and operating under a modern assignment system, if necessary, it is possible to mobilize all of the apparatus in any part of the city in less than 30 minutes. The cities and towns around Boston are well equipped with motor apparatus and upon call can assemble their men and equipment in almost any part of the city in a very short time.

Tucker County, West Virginia, Quarries All Aggregates for Thomas-Oakland Road

By W. E. Carleton

County Road Engineer, Davis, W. Va.

TO avoid the heavy expense involved in shipping road materials from distant points, Tucker County, W. Va., in common with many other counties in the state, must develop its own resources of concrete aggregates for hard road construction. Situated at an elevation of over 3,000 feet on top of the main ridge of the Allegheny Mountains, Thomas is in the midst of a region that affords an abundance of sandstone, some of which is well adapted

particles have been used in several instances in concrete pavements with satisfactory results—for example, in the Terra Alta-Oakland Road in Preston County. These commercial plants produce sand by first crushing, washing and then rolling native sandstone under heavy stones fitted with removable steel rims. The stones revolve about horizontal axes and travel in a circle about a vertical axis.

For the Thomas-Oakland Road, very



THE SAND PRODUCED BY BREAKING UP THE SOFT STONE WITH THE BACKS OF SHOVELS WAS LOADED INTO 3-TON MINE CARS AND MOVED TO STOCK PILES ALONG THE SUBGRADE

for use in concrete roads. On the Thomas-Oakland Road, built in 1919-21, both sand and crushed stone were secured by the contractor from quarries along the highway.

Sand made by rolling sandstone is produced in large quantities for glass manufacture in the eastern Piedmont of West Virginia—that narrow strip that extends between western Maryland and northern Virginia. Glass-making sand is much too fine for concrete, but the coarser rejected

simple methods were followed in preparing the sand. A deposit of suitable sandstone having very little binding material was discovered, and it was found that after this was loosened by blasting it could be broken up with sledges and picks, and the smaller pieces then reduced to their constituent sand particles by pounding with the backs of shovels. A well-graded, clean sand was the result, and the cost of production was reasonable. Tests made by the testing

laboratory of the State Road Commission at Morgantown showed the sand to have a strength at 28 days slightly in excess of that of standard Ottawa sand. Fifteen per cent passed a $\frac{1}{4}$ -inch screen, but was retained on a 10-mesh sieve; 76 per cent fell between the 10- and 50-mesh sieves; while less than 2 per cent passed the 100-mesh sieve.

At the sand quarry, seven men and a foreman were usually employed. One man operated the drill, and the six laborers broke up the rock with sledges, picks and shovels. In ten hours this force could turn out about 50 cubic yards of sand, delivered at a stock pile along the road. Two more men loaded motor trucks by hand. The foreman also looked after the air compressor that operated the Ingersoll-Rand jackhammer drill used in taking out the rock. The surface layers were considerably harder than the stone in lower strata. Sand was loaded into a 3-ton mine car and hauled by a horse along a short, narrow-gage track to the storage pile. The car was dumped by two laborers who accompanied it.

Crushed stone for the coarse aggregate was obtained from a second quarry a short distance away. Tests made on this material by the State Laboratory showed it to have a French coefficient of 12.5, a hardness of 18.5 and a toughness of 9.5. Its specific gravity was 2.55, and the water absorbed was only 2.5 pounds per cubic foot.

Equipment at the quarry included a $3\frac{1}{2}$ -

inch Ingersoll-Rand steam drill; two 3-ton wooden cars and a track to the crusher; a portable Champion jaw crusher outfit, including a bucket elevator, rotary screens and portable loading bins; and a 30-h. p. Farquhar steam boiler. The crusher, which had a receiving opening of 10 by 20 inches, was at times operated in two shifts for 20 hours a day. One shift then worked from 7:00 A. M. to 5:30 P. M., and the other from 6:00 P. M. to 4:30 A. M. Illumination at night was furnished by six miner's cap lamps, one of which was worn by the engineer, one by a crusher man, one by the car driver, and one by each of three quarrymen. All blasting was done in the daytime. One of the loaders drove the horse that pulled the car to the switch, from which point it descended by gravity to the crusher. The empty car was waiting at the switch, and was taken up to the quarry, on the return trip.

The day shift consisted of two drillers, three men breaking up the large pieces, three loading the cars, two at the crusher, an engineer and a foreman. When the plant was operating steadily, this gang turned out about 80 cubic yards of stone in 10 hours.

Aggregates were hauled by truck to the subgrade ahead of the mixer; mixing, finishing and curing methods were standard. With a crew of 33 men, including three on fine grading, a pump man and a foreman, from 400 to 450 linear feet of 16-foot slab 6 to $7\frac{1}{2}$ inches thick was placed in 10 hours. No expansion joints were used. The contractor was the Monongahela Construction Company of Fairmont, W. Va.

On the latter part of the job, the grading superintendent worked under a bonus plan whereby in addition to his salary he was paid 5 cents a cubic yard for all earth over 4,000 yards moved in a month, and 5 cents additional per yard for all over 5,000 cubic yards. His crew consisted of 11 men, 6 teams with dump-wagons and a Marion steam shovel with a 1-yard dipper. He was usually able to earn a good bonus, as much of the grading was fairly heavy.

The contract was for 6.3 miles of concrete, which paved the road from Thomas to the Preston County line. An additional mile



AGGREGATES WERE STORED ALONG THE SUBGRADE AND DELIVERED TO THE MIXER SKIP IN WHEELBARROWS



THE THOMAS-OAKLAND ROAD, WHICH SERVES THE KITTANNING AND FREEPORT COAL FIELDS OF WEST VIRGINIA, WAS BUILT WITH LOCAL AGGREGATES

will be placed between Thomas and Pendleton Run on a new location which eliminates some bad hills. The state is expected to improve the connecting road through Preston County soon, so that a good surface will be available to Oakland, Md. Bonds issued by the Fairfax Road District furnished the money for most of the work, but 1.9 miles beginning at the county line received Federal Aid to the extent of 35 per cent of the cost of the surfacing only.

Large coal fields are situated in Tucker County, in which Kittanning and Freeport coals are mined, and much of this coal goes to the Bethlehem Steel Co. The Kittanning coal is particularly low in ash and is excel-

lent for smithing. Some coke is also made in the county. The region around Thomas has long needed a good highway connection with the Maryland system, and an excellent start has now been made.

The engineering work on the Thomas-Oakland Road was let by contract to Edward St. Clair Smith, now General Inspector for the State Road Commission. The writer represented Mr. Smith and was in direct charge of the job. R. J. White served as inspector. On the Federal Aid project, B. E. Gray represented the Bureau of Public Roads as Senior Highway Engineer in District 10. Mr. Gray is now with the State Road Commission as Division Engineer.

A Plea for Municipal Art

NEW YORK—enterprising, rich, prosperous, generous, and proud, as she should be, of her greatness—is yet far behind not only Paris and London, but even tiny provincial towns of France, Italy, Germany, in the possession of art. . . . The commonwealths of Athens, Florence, Venice, the free burghs of Germany, the great trading towns of Flanders, the cities which have passed through a period of natural evolution in art, considered art a national glory, and used it both as a means and as an end in a truly democratic spirit, “pro bono publico.”

They believed that certain benefits arose

from the cultivation of beauty, that the pleasures of private life, the dignity of public life, were increased by the aid of the arts. . . . Now to whom did the cities of the past owe this public decoration? Was it only to kings, and emperors, and grand dukes, whom we in America have not? No. Athens, Florence, Venice, Bruges, Nuremberg, were given their art by the very men whom we have with us today—the magistrates, the merchants, the artisans.

—From a statement by Edwin H. Blashfield, President, National Academy of Design.

A Modern Rustic "Swimmin' Hole"

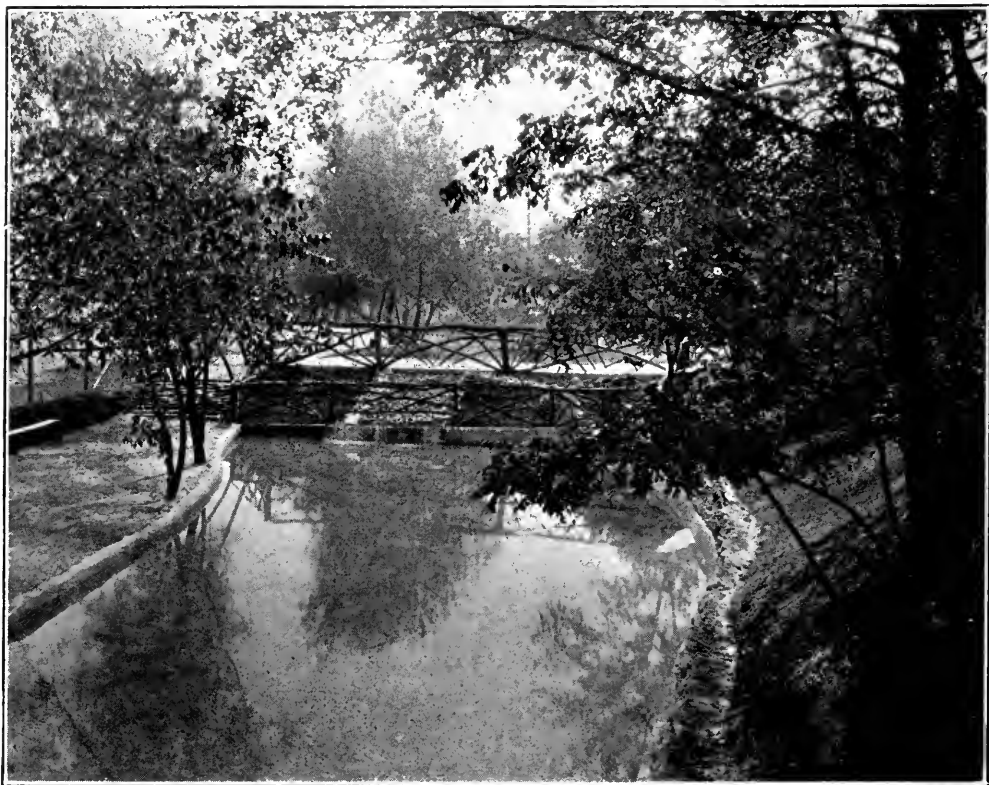
By Leigh E. Burdick

A REPORTER'S need of "copy" has resulted in a notable civic achievement in Middletown, Ohio—the manifestation of Riley's "Old Swimmin' Hole."

The city had long contemplated a symmetrical stone pool as a public place in which to swim. It was not until the arrival of the new City Manager, Kenyon Riddle, that sentiment was given a place on the program, and then, with a little human interest newspaper publicity, an "old swimmin' hole," conceived along the idea of Riley's poem, was the result. Middletown's municipal pool is not the first in the United States, by any means, but it surely is the first of its type—a vision of native rustic beauty, with overhanging boughs and moss-covered banks, a place where the children can mingle with their elders in the enjoyment of bathing.

It was one of those drab, uneventful days when finding live copy for a live paper is a problem. The writer dropped into the office of the City Manager, and the conversation drifted toward the need for a municipal swimming pool. "Let's look around and find the spot for it," suggested the writer. Scribe and executive leaped into the latter's auto, and the first place visited was in a delightful growing subdivision—the very spot where the pool was later built. "Eureka!" we both exclaimed almost in the same breath.

The site was most desirable because of the natural beauty surrounding the place. It was a part of the old Bulls Run ditch, or ravine, at the intersection of Bellemonte and North Streets, and in the City Park, known as May Farm. It provided for a high bank along a portion of the pool, while



THE WADING POOL IN MIDDLETOWN, OHIO, WITH THE MAIN SWIMMING POOL BEYOND

another part was bordered with fine trees, some of them large willows with their branches dipping down into the water, and at another part was a Tedge of rocks projecting out over the water and extending above the walls.

That night the *Middletown Journal* carried a human interest story telling of the need for a new pool, suggesting the ideal spot, and hinting that the campaign for the pool was about to be launched. More than one civic organization responded. The Park Commissioners offered that part of the park for the pool. The men most active in promoting the scheme then met with the Board of Directors of the Recreation Association, and the latter agreed to operate the place, with Frank Marsh, recreational director, in charge. The City Commissioners proposed to supply the water. The City Manager and representatives of the Park Commission and the Recreation Association sought out the committee in charge of Middletown's Million-Dollar Civic Fund and secured an appropriation of \$7,600 to build the pool.

All those concerned agreed that the pool must be along rustic lines—that it was not to loom up “like a bathtub set in a glare of gravel.” To curtail expenses the City Manager set to work and drew up the blueprints. The work of construction was actively supervised by him, at a great saving of expense. A great many public-spirited persons have contributed liberally toward the designing and building of the pool, among them the members of the City Commission, the Park Commission, the Chamber of Commerce and the Recreation Association, and a great deal of credit is due the contractors, Steed & Wooster. Within thirty days from the time the spot had been selected, 300 happy children and almost as many grown people were splashing about in the cool waters on the gala opening day, featured by many aquatic events.

From the start, the designers of the pool planned to harmonize the construction with the natural symmetry of the location, resulting in less actual work and greater natural beauty. The pool was built of one part cement to four parts mineral aggregate, and the walls averaged 8 inches thick. It is reinforced horizontally and vertically, and the floor is of reinforced concrete using triangular mesh wire. The main pool is

270 feet long and 40 feet wide, and is from 3 to 7½ feet in depth. The capacity of the pool is 500,000 gallons. It can be filled in ten hours and emptied in four hours. The walls have a slope or batter of 4 inches at the base and are irregular in perimeter.

A wading pool for the children adjoins the deeper pool for adults and is 90 feet by 30 feet in dimension. It has a depth of from 6 to 18 inches and holds 20,000 gallons of water. The smaller pool is filled from the overflow of the larger, the water in the course of its travel furnishing waterfalls and goldfish pools and running under a beautiful rustic bridge between the two pools. The water enters at the bottom of the deep end of the larger pool, and as it is heated from natural causes it rises to the surface and flows over the top of the shallow end down a long slope and into the smaller pool, effecting perfect circulation. By the time the water reaches the smaller pool it is warm enough for the little tots.

The buildings, which provide check-room, dressing-rooms, sanitary arrangements, etc., are in keeping with the pool, having a rustic appearance. This has been accomplished by covering all exposed surfaces with bark as it comes on slabs from the sawmills. These buildings are grouped in a natural recess in the south bank, which forms a cove or bay in the main pool. The visitor comes through the main entrance of the bath-house, receives his check and basket, goes through a turnstile, changes his clothing, checks it in the main room, and then goes through a shower-room and directly out onto the edge of the pool.

The walls of the pool are coped in rustic stone masonry to cast a shadow in the water. A sand beach averaging 15 feet in width runs the full length of the pool under shady trees, and on it diving towers have been erected. The sand was imported from the Great Lakes. A high, strong Armco web fence runs around the entire property. Ten cents admission for those over sixteen is charged, to pay the small running expense of \$16 a day when the pool is in operation.

When the pool was entirely finished, it was turned over to the City Recreation Association for operation and maintenance. The final cost, including everything, amounted to \$8,200, approximately \$600 more than the appropriation, but with a

vision of the delightful magnitude of the undertaking, the added sum was quickly given.

It is planned to use the pool for ice skating, and the overflow is arranged to vary the elevation of the water so that in the

winter time the ice can be flooded to provide a new and smooth surface.

The original site, as it appeared before the construction of the "Swimmin' Hole" was begun, and the completed main pool are shown on the front cover of this issue.

Every Czech Village Is to Have a Library

THERE are to-day practically no illiterates among the Czechoslovaks, says a bulletin just issued from the office of the Consulate General in New York. Liberal laws and generous appropriations for educational purposes are approved by all parties in the republic, and now every village has, or is soon to have, its public library.

The Parliament passed a law on July 22, 1919, requiring that a public library should be set up by the end of December, 1920, in every community of more than 400 inhabitants which possessed at least an elementary school. For communities of less than 400 inhabitants the time allowed was up to the end of 1921. Communities possess-

ing no school, but having at least 300 inhabitants, were given until December 31, 1924, and still smaller communities until December 31, 1929. In communities which have a racial minority numbering at least 400 persons, and which have a minority school, it is the duty of the community to provide a library for the minority in its own language. In such mixed communities as possess no minority school, but where there is a minority population of at least 400 persons, the public library of the community must have a special department containing a reasonable supply of reading matter in the language of the minority, and this department is to be administered by members of the minority.

New York City to Have a Great Open Forum

THE Town Hall in New York City has received an offer of a gift of \$500,000 on condition that the organization raise an equal amount. The donor is a woman who has for years been familiar with the work that centers about the Town Hall and has seen what has been accomplished by the League for Political Education, the Director of which is Robert Erskine Ely. One of the conditions of the gift is that her name shall remain unknown. The \$1,000,000 that will thus be raised will free

the Town Hall of debt, permit the finishing of the building with two floors above the auditorium, and make the auditorium available for more public meetings. The floors above will provide an annual income of about \$30,000. With this fund, it is believed that the organization will never again be obliged to ask for contributions, and the Town Hall will be of the greatest possible service to the people of New York as an open forum at which all citizens are welcome.

More Power to the Zoo

RECENTLY we reported that St. Louis was planning to put a cow in its zoo. And now we learn that the Detroit Zoo presents to public gaze four novel additions—a bull and a cow, a boar and a sow. If as lad or lass you have stood by the barnyard gate calling "co-boss" through the dusk, this placing of domestic animals alongside tiger and elephant must be amusing and a little disconcerting. Yet actual count of hands in three Detroit schools showed that slightly less than half the pupils had looked upon cow or pig in the flesh. It has long been agreed that one-half the world does not know how the other

half lives. Now it appears that a considerable proportion of the remainder do not know how their own half lives. Wise men describe the civilization of eastern Asia as a rice civilization; by contrast ours is a milk and meat civilization, among whose advantages is the prompt return of natural fertilizer to the land. For social habits and organization, as well as in bone and sinew, we have to thank, among others, our dumb and kindly slaves—the "fifth estate." Well, at least Detroit has made a start toward correcting the growing misapprehension that milk originates in bottles and sausages in links.—*Colliers*.



TRANSPORTING THE PIPE TO POSITION ON THE ICE

Quick Work in Extending a Water-Works Intake

A 504-Foot Extension Laid from the Ice

By V. Flindt

Engineer, Storm Lake Water Committee, Iowa

IT would probably be very difficult to find an engineering undertaking which would demand greater promptness in execution than the extension of the Storm Lake water-works intake, 504 feet into the lake, laying the pipe from the ice. There is a possible exception in construction work carried on in connection with war operation. The end of the old intake, a 12-inch wrought iron pipe, was located 297 feet from the lake shore in 5 feet of water. The proposed end was to be 801 feet from the shore in 8 feet of water.

When the ice is not unusually thick, it disappears very quickly at the intake, shortly after the weather turns warm. The complete success of the undertaking might have been, therefore, not a question of days, but of hours, and such was the case in this operation. The great trouble which the city experienced this last summer

with green algae in the drinking water, was largely caused by the intake's being too close to the shore. The City Council, therefore, decided to use the first opportunity to construct an extension.

Different kinds of pipe and construction methods were investigated during the summer, with the result that the engineers suggested Universal pipe, manufactured by



MOVING DERRICK FORWARD TO HANDLE NEW SECTION OF PIPE

the Central Foundry Company of New York, the pipe to be laid from the ice. The reason for choosing this special pipe was the flexibility of the joints, the speed with which the pipe lengths could be put together, there being only two bolts to tighten at each joint, and the ease with which the 6-foot lengths could be handled. The City Council accepted this suggestion, and during the fall the pipe was purchased and stored on the shore in the most convenient manner for its transport on the ice.

Daily observations of the thickness of the ice were taken, from the beginning of the cold weather in the middle of December, and on Tuesday, December 19, the superintendent reported that the job could be started. The ice was then 10 inches thick, and the temperature 13 degrees below zero in the early morning. The day was used in such preparations as cutting a channel in the ice, raising the old intake, and making a 30-foot skid of 4- by 6-inch lumber for the support of the pipe.

Wednesday morning the temperature was 4 degrees above zero, and at about 11 o'clock in the morning preparations were finished. A ring of ½-inch iron 2 inches wide was bolted to the end of the old intake for calking the bell special which was to be used for making the only lead joint on the job. Shortly after eleven o'clock the first length of new pipe was laid, and from then on the work progressed with surprising speed.

Thursday morning the weather turned warm, and at noon it was above freezing. In the afternoon the ice at the channel was covered with several inches of water and was cracking under the weight of the heavy pipe. In spite of these difficulties there was only a few hours' work left for Friday.

At about 10 o'clock Friday morning the new end of the intake was lowered in 8 feet of water, and the job was finished. The weather was constantly getting warmer,



TIGHTENING THE BOLTS TO MAKE A WATER-TIGHT JOINT IN THE PIPE BEFORE DROPPING IT THROUGH NARROW TRENCH TO LAKE BOTTOM

and it is doubtful if any work could have been done in the afternoon.

The laying of the 504 feet of 12-inch cast-iron pipe, weighing 80½ pounds per foot, under 5 to 8 feet of water in less than 2 days justifies, I believe, the choice of the pipe and the working method and speaks highly for the ability of the men who did the work.

A. Dlugosch is Chairman of the Storm Lake Water Committee, with J. E. Spooner and R. B. Eno, the other two members. The writer was engineer for the Committee, B. Stull, Superintendent of Construction, and O. L. Lezotte represented the Central Foundry Company of New York during construction.

FINAL ESTIMATE OF COST OF THE EXTENSION OF THE STORM LAKE WATERWORKS INTAKE, DECEMBER 19 TO 22, 1922

| | |
|--|-------------------|
| 504 linear feet of pipe at \$2.50..... | \$1,260.00 |
| Specials | 46.30 |
| Drayage | 28.75 |
| Labor | 42.35 |
| Skid | 15.05 |
| Engineering, superintendence and incidentals | 62.65 |
| | \$1,455.10 |
| Less discount for cash..... | 26.12 |

Total \$1,428.98
 $\$1,428.98 \div 504 = \2.84 per linear ft. of pipe in place.

Ingratitude toward faithful, efficient, conscientious city officials, who have put in their best, and lifted every pound that they were able, for the benefit of their home city, is one of our American sins.—George W. Tuttle.

Suggestions for Maintaining Bituminous Pavements by Counties

By B. C. Tiney

Assistant Maintenance Engineer, Michigan State Highway Department

BITUMINOUS materials for surface treatment are quite generally applied by motor pressure distributors of various types. The pressure is usually afforded directly by a pump, operated by a power take-off from the transmission of the truck, or, in a few instances, by a separate power-plant. A powerful truck motor is required if it is to assume the additional work of pump operation. The pump is so designed that it can be used for filling the distributor from tank cars as well as for applying material to the road surface. A cut-out may be so arranged that the exhaust from the motor comes in contact with the pump, and by warming the material, increases fluidity and ease of pumping.

It is important that distributors be equipped with heating arrangements. Even though the material is brought to the required temperature in the tank cars, a long haul or other delay will often necessitate reheating on the road. Heating equipment may consist of oil-burners or steam coils. In one type of distributor steam is generated by a small boiler on the rear of the truck, but it is more commonly supplied from an outside source, which is not always conveniently located. The advantage of a self-contained source of heat is obvious, as it permits of heating during a long haul, so that the material arrives on the road ready for application.

Spraying manifolds are so designed that any width of treatment from 2 to 16 feet may be applied, but common practise confines the application to about 8 feet, or half the width of the roadway, at one time, as this enables traffic to avoid the freshly laid material.

Distributors should be equipped with thermometer, pressure gage and speedometer. The tank should be calibrated in order that the correct gallonage may be charged to each road. The rate of application is varied by the setting of valves

and by the speed of the truck. A table showing the quantities applied per square yard for different valve settings and truck speeds should be posted in the cab for the use of the operator.

Ownership of Distributors and Storage Tanks by County

Until recently, the distributor service afforded by the bituminous materials companies has been largely employed by counties in this state. This service, while very commendable in some respects, had certain drawbacks. Many counties required service at the same time, and the companies found it difficult to arrange a schedule which would give every road a treatment at the proper time. A macadam road upon which a necessary treatment is deferred soon begins to ravel and requires hand patching.

The work, being widely scattered, required that distributors be moved long distances at considerable expense. The labor gangs employed by the companies to prepare surfaces and spread stone covering, were compelled to remain idle at times, because of unfavorable weather conditions or delay in shipment of materials, and this increased the overhead cost to the companies.

It was believed that conditions might be bettered and the work placed upon a more economic basis if performed directly by use of county forces and equipment. With this in view, five counties purchased distributors in 1922. These machines were mounted on army trucks furnished through the State Highway Department at a nominal cost.

The plan has, in all cases, proved very satisfactory. The quality of work performed has been excellent, and a material saving in cost has been effected. An analysis of costs in one of these counties for the season of 1922 is as follows: Twenty-four roads, aggregating 408,000

square yards, were treated with 135,000 gallons of tar, averaging a little less than $\frac{1}{3}$ -gallon per square yard. Tar cost 9.4 cents per gallon f. o. b. county in tank cars. Slag cover, costing \$2.25 to \$2.50 per ton f. o. b. cars in county, was distributed in piles by motor trucks. Labor was 35 cents per hour.

AVERAGE ITEMIZED COST PER SQUARE YARD

| | |
|---|---------|
| Slag, in piles along road..... | \$0.016 |
| Preparing surface and spreading slag..... | 0.008 |
| Tar f. o. b. railroad siding..... | 0.031 |
| Application of tar..... | 0.005 |
| Gasoline, oil and overhead..... | 0.006 |

Total cost per square yard..... \$0.066

A portion of this material was applied hot. The costs given include a rental charge on equipment used.

The contract price in this county in 1921 for a treatment of $\frac{1}{3}$ -gallon per square yard was \$0.113. On this basis we have a saving of \$0.047 per square yard on 408,000 square yards, or approximately \$19,000. About \$4,000 of this amount is due to a reduction in the price of tar, leaving a saving of \$15,000 which is chargeable to the performance of work by use of county forces and equipment.

Similar results have been the experience of other counties operating their own distributors, and it is believed that this plan will come into more general use. The installation of permanent tanks for storage of bituminous materials would add to the efficiency of the system. Demurrage and tank-car rental, which amount to considerable sums if weather conditions are unfavorable, would be practically eliminated. The shipment of material is liable to be, at best, an erratic proposition. Storage facilities would tend to coordinate shipment with application of material, enabling the work of distribution to proceed more steadily.

It is often possible to install storage tanks at such elevation as to permit of unloading from tank cars by gravity. Tanks should be of sufficient size to hold one carload (approximately 10,000 gallons) of material, and should be equipped with steam coils or other arrangements for heating.

Repairing Breaks in Bituminous Roads

In addition to regular surface treatments at intervals of from one to three years, depending upon the amount of traffic, it is necessary that bituminous macadam sur-

faces be patrolled frequently and small holes patched soon after they appear. The importance of this feature of the work is usually underrated, but it is one of the answers to successful maintenance. Shallow breaks in the surface crust may be swept clean, given a brush coat of bituminous surfacing material and covered with a layer of stone chips. A brush coat is preferable to a poured treatment, as it avoids an excess of material, which is very undesirable. The practise of patching holes greater than $\frac{1}{2}$ - to $\frac{3}{4}$ -inch in depth by pouring partly full of a cold bituminous surfacing material and covering with an excess of chips, has been quite common and is to be discouraged. It is obvious that such patches will remain unstable for some time and a large per cent of them will be displaced by traffic. Patrol maintenance on shallow patches may be conveniently handled by storing bituminous surfacing material in barrels sunk in the ground at intervals along the road. These barrels are provided with covers and are readily filled by a hose from the distributor tank. Piles of stone chips are also stored at necessary intervals. A patrolman equipped with wheelbarrow, bucket, broom and shovel is enabled to patrol a maintenance section very efficiently.

Holes of an inch or more in depth may be conveniently repaired by the cold patch method, being tamped full of a cold mixture of aggregate with cut-back tar or asphalt, which depends for its setting-up qualities upon the evaporation of volatile oils.

The stone for this mixture may range in size from $\frac{1}{4}$ - to $\frac{3}{4}$ -inch, fractured shapes being preferable to rounded pebbles. The quality of the aggregate is a large factor in the success of any bituminous mixture, and it is often found to be economy to ship in a hard, tough stone at additional cost, rather than to use a cheaper local material of inferior quality.

The mixture should be made in the proportion of 16 or 18 gallons of bituminous material to a cubic yard of stone. A small amount of coarse sand may be added, but is not essential to good results. An excess of either sand or bituminous material will tend to make the patch unstable.

It is found that the patches offer more resistance to displacement by traffic if the

mixture is allowed to cure for a few days before being placed in the road, and also, in case of the deeper holes, if a larger stone is used in the bottom layer of the patch, and surfaced with the finer mixture. The hole to be patched should be swept clean and painted lightly with bituminous material before the mixture is tamped in. A light sanding of the surface prevents adhesion to traffic during the curing process.

Where considerable quantities of cold patch are used, the mixing is most efficiently performed by means of a small concrete mixer. This may be housed in a building of sufficient size to provide space for mixing and storage of materials. The design of the buildings should be such that a motor truck may be driven into it and at least a part of the materials handled mechanically.

A number of such mixing stations placed at central locations for given maintenance sections, could be constructed on standard plans, so that one mixer could be readily moved by truck and made to do service for all stations. In this way a supply of mixture might be kept on hand and curing at each station.

A hundred miles of bituminous surfaced road, for example, might be divided into four 25-mile sections, each having a central mixing station, so that the average haul of mixed material would be only 6 or 7 miles. This condition would, of course, be ideal; the work is in general more scattered, but it is believed that in most cases a satisfactory arrangement could be worked out. Such a system has been in practise in Lucas County, Ohio, for the last five or six years and has proved very efficient. The mixing stations here are used also for storage of equipment and as headquarters for other kinds of maintenance work.

Replacements of Bituminous Surfaces

Extensive replacements of bituminous surfaces are often made with bituminous macadam, by the penetration method. Two sections of a certain trunk-line of this state have, within the past four years, furnished notable examples of road failures. They were quite widely separated but had many characteristics in common, the construction of both being a Topeka surface on a cement-concrete base. The failures were caused by a combination of heavy traffic, poorly-drained subgrade, and insufficient thickness of base. The maintenance of these roads

presented a difficult problem. Both were main arteries carrying an average daily traffic of 2,500 to 4,000 vehicles, many of which were heavily loaded trucks, and it was imperative that extensive replacements be made with as little inconvenience to traffic as possible.

This consideration led to the choice of bituminous macadam for replacement, as these patches could be placed under traffic almost as soon as they were finished. The general method of procedure was to remove sections of the broken pave-

ment and the subgrade to a depth of at least 11 inches below finished grade, or deeper if necessary to obtain a firm foundation for the new work. It was often found necessary to go to a depth of 18 to 24 inches. The lower portion of the patch was constructed of macadam in 4-inch layers, compacted by a roller, if the patch was large enough to permit a roller to work, otherwise being hand-tamped. In the case of some of the larger patches, the upper layer of this macadam base was water-bound, but in most instances it was merely dry-filled with screenings. The surface course of bituminous macadam was then placed to such height that it rolled down flush with



TYPE OF BITUMINOUS DISTRIBUTOR USED
BY MICHIGAN COUNTIES

the finished grade of the old pavement. None of these patches have ever failed under traffic, some having been in place for three years, and having been given surface treatment maintenance.

This work is rather expensive, costing from \$5 to \$7 per square yard, but the conditions were abnormal and any type of replacement would have been very costly. Had it been possible to close the roads to traffic, a saving of at least 25 per cent would have been effected. It is thought that these roads may ultimately be rebuilt with a heavy macadam base and a high-type surface, in which event many of the large patches will have a salvage value. In fact, 4½ miles of one section has been reconstructed, using a 3-course water-bound macadam, 12 to 15 inches thick, which is at present carrying traffic on a surface treatment. The idea in this case is to let the macadam season under traffic for a time before placing a high-type surface.

The Use of Portable Asphalt Plants

The maintenance of asphaltic concrete or sheet asphalt surfaces in locations where an asphalt plant is not accessible is often carried on by the use of small portable plants wherein the asphalt and the aggregate are heated in separate compartments and the mixing is done by hand. A gang of four men using one of these plants can mix and lay from 30 to 60 square yards of surface

daily. A roller is not required on these small patches, as they may be compressed by hand-tamping with hot irons.

In relieving ruts and depressions in an old asphaltic pavement by the addition of fresh mixture, the new material may be bonded to the old by first softening the latter with a surface heater. The heat is applied by oil-burners and confined to the pavement by a hood. Care must be taken to avoid burning the old material, although no flame comes in contact with it.

Old material taken from an asphaltic pavement may sometimes be reheated and used again. This plan is used a great deal in the winter maintenance of asphaltic streets in the city of Cincinnati. The old pavement is broken into pieces about 2½ inches in size and placed in 4-wheeled kettles of 100 gallons capacity. About 4 or 5 gallons of water are added, the kettle is covered and the mixture allowed to steam for about ½-hour. The material is then turned over with heavy bars, and spaded. Time to steam is allowed, and the mixture is turned and spaded several times until the water is all evaporated and the temperature raised to about 325° F. The kettles are then hauled to the street and the mixture tamped into the holes.

ACKNOWLEDGMENT.—From a paper read before the Ninth Annual Michigan Conference on Highway Engineering at the University of Michigan, Ann Arbor, Mich.

Municipal Motors in England

INTERESTING statistics covering the use of motor trucks, busses and cycles by the municipal authorities of Great Britain have recently been published. They indicate a total of 5,250 motor vehicles employed in the various branches of municipal hauling and passenger transport. Approximately correct figures for the different classes of work follow:

| Class of Work | Type of Vehicle | | |
|--|-----------------|----------|-------|
| | Electric | Gasolene | Steam |
| General haulage (all miscellaneous work done by trucks of 1½-ton or more capacity) | 160 | 765 | 520 |
| Refuse collection.... | 450 | 320 | 65 |
| Light hauling (trucks | | | |

| Class of Work | Type of Vehicle | | |
|---|-----------------|----------|-------|
| | Electric | Gasolene | Steam |
| under 1½-ton rating and passenger-cars for officials, etc.).. | ... | 720 | ... |
| Fire protection..... | ... | 575 | ... |
| Passenger service (motor busses)..... | 15 | 565 | ... |
| Ambulance service.... | ... | 570 | ... |
| Street cleaning | 15 | 230 | ... |
| Inspection, policing, etc. (motor-cycles only) | ... | 150 | ... |
| Miscellaneous (road-rollers, tower-wagons, and other special vehicles)..... | 5 | 115 | 10 |
| Totals | 645 | 4,010 | 595 |
| —Power Wagon. | | | |

The Power-Plant of the Fond du Lac, Wisconsin, Water-Works

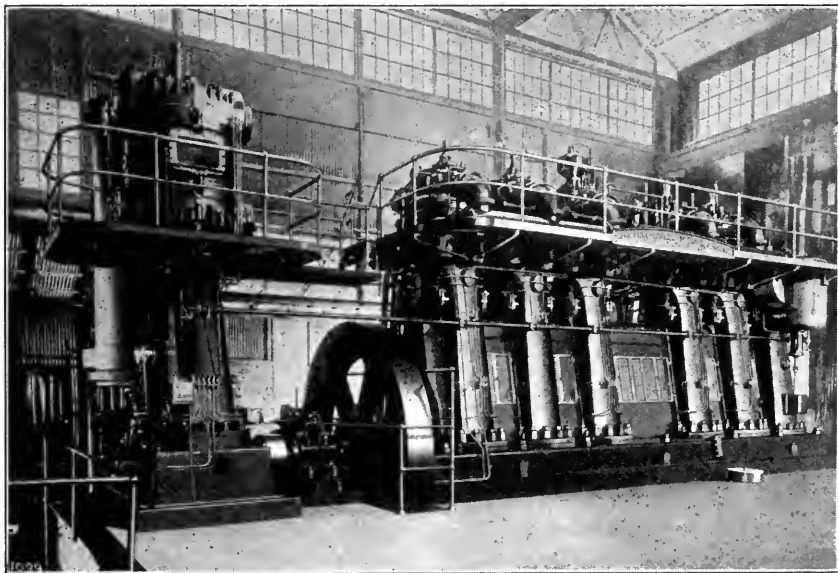
By J. J. Breister

Superintendent of Water-Works, Fond du Lac, Wis.

THE original pumping-station for the Fond du Lac, Wis., water-works was built in 1885 of brick construction with a slate roof. It was enlarged in 1912. Steam for the pumping equipment is furnished by two Erie City water-tube boilers of 150 boiler horse-power each, and one Scotch marine tubular boiler of 150 horse-

power. In case of fire this is raised to 100 pounds, and when the fire is on the outskirts or far from a hydrant the pressure is raised to 135 pounds. The fire chief has the right to call for the pressure which he thinks necessary for combating any fire throughout the city.

Water is pumped from nine deep wells



DIESEL ENGINE UNIT IN THE FOND DU LAC WATER-WORKS

power, which are housed in the new boiler house and served by the 105-foot brick chimney built in 1912.

Two Holly horizontal duplex compound condensing crank and fly-wheel double-acting pumps of 3,000,000 gallons a day capacity were installed in 1885 when the pumping-station was built. One Prescott horizontal triple expansion condensing direct-acting pump of 2,300,000 gallons per day furnishes the stand-by equipment. These three units are used to pump the water from the reservoir into the mains. The normal pressure of the city is 70 pounds, but in

ranging in size from 6 to 14 inches in diameter and from 600 to 1,100 feet deep. All of the water is pumped from the wells by air lift and is discharged into a 2,500,000-gallon reservoir. Air for the air lift pumping is furnished by an Ingersoll-Rand horizontal cross compound condensing crank and fly-wheel air compressor with a capacity of 2,250 feet of free air per minute, installed in 1913, and also by a 330 brake horse-power Nordberg Diesel engine direct-connected to a Nordberg compressor of 1,700 cubic feet capacity of free air when running at 225 revolutions

per minute. The compressor was designed to pump against a pressure of 110 pounds per square inch. The engine burns a black Oklahoma or Kansas oil of about 24 to 26 Baume and is guaranteed to deliver 1,000 cubic feet of air for 1.7 pounds of fuel oil. This combined heat unit, therefore, will turn out a million cubic feet for 220 gallons of oil, or for \$11 with oil at 5 cents a gallon. The compressor plant will turn out one million cubic feet in about 16¾ hours when running full capacity. The present steam compressor plant uses upwards of 4 tons of coal during this same time, which would represent approximately \$34, so that there is a saving of about \$23 a day, or \$7,000 a year, through the use of the Diesel plant. The entire Diesel engine with its compressor weighs 135,000 pounds.

Water is lifted from the wells into the reservoir, from which it is pumped to the city. The reservoir was built in 1885 of stone and concrete in excavation and embankment. It is 221 feet in length, 126 feet wide, and 11 feet deep, and has a wooden roof.

A brick garage and storeroom measuring 40 by 100 feet, to be used for the care of water department trucks and the storing of material as well as a work-room for repairing and testing meters, adjoins the pumping-station and is heated from the boiler plant.

About 15,000 feet of cast iron pipe will be laid this summer, and a 6,000,000-gallon pump is to be added to the equipment for pumping water under pressure into the mains.

The City's Dust

This Iniquitous Distributor of Disease Can Be Held in Check by Proper Methods of Street Cleaning

THE increase in street traffic is creating new problems in public hygiene. The noises made by automobiles and street cars cause nervous disorders. By the odors of gasoline and the gases generated by the imperfect combustion of oils the system is weakened and sometimes the blood poisoned. Not so much attention has been given to the dust problem, but its seriousness merits attention. The United States Government has published monographs on the dangers lurking in dust, and medical experts warn of the disease-carrying power of dust, frequently more perilous than that of the house-fly, mosquito or flea.

Chemical analyses show that the city's air is charged with fine particles of dust from the decomposition and disintegration of every conceivable substance exposed to the city's wear and tear. Thousands of tons of stone, coal, cinders, ashes, sulphuric acid, sulphuretted hydrogen, carbon bisulphide, ammonia, chlorides, sulphates, salts and fetid matter are suspended in the air or allowed to settle on the floors and walls of buildings and on street pavements. The parasitic bacteria discoverable in New York dust, according to the best investigators, vary from 300,000 per gram to 3,000,000. In a Broadway hotel 360,000 germs were found in a gram of dust. About the same number were contained in the dust on the floor of a Fifth Avenue church.

The influence of dust in causing illness at this period of the year is generally known. Insurance actuaries, family physicians and sanitary experts have long been preaching about it. Certain types of dysentery are transmitted by water, food and contact with dust. These in-

testinal disorders appear most active between March and June, on account of the action of the winds in moving the dust, and also because of the renewed activities of flies and other domestic insect carriers. Efficient cleaning of street, house, office and store is called for to reduce the losses from this cause.

The chief preventable diseases spread by city dust are diphtheria, influenza, pneumonia, whooping cough, measles, scarlet fever and dysentery. Sanitary authorities are agreed that these diseases could be much reduced in any city by hygienic measures. Colds and influenza flourish when the streets are unclean or dusty. It has often been noticed that after a couple of windy, dusty days an epidemic of coughs and colds develops. The dust irritates the delicate mucous membranes of the mouth, nose and throat, carries to the inflamed surfaces the active germs of colds, influenza and catarrh, and these in turn develop their respective diseases. The elimination or sterilization of city dust is of national importance. While we boast of our lively stepping and devotion to business, the medical reports indicate that we are the victims of many preventable diseases.

There can be no excuse for overlooking the city's dust as a carrier of contagion and disease. Efficient street cleaning at night, the reduction to a minimum of furniture, carpets, rugs and stored articles and dust accumulators in our homes, the disinfecting of the streets and of floors in houses, offices, stores and public conveyances, the general purification of the air and the protection of food, are urgently called for. There is danger in dust.

—*New York Times.*

Incorporated Districts---Blessings or Drawbacks?

By Frederick P. Gruenberg

Director, Bureau of Municipal Research of Philadelphia

THE December, 1922, number of THE AMERICAN CITY contains an article by W. M. Olson of the Department of Public Health of Springfield, Ill., entitled "The Value of Sanitary Districts." Mr. Olson's article is clear and interesting, but there is room for discussion of the whole subject of incorporated districts from a different point of view. The present writer believes that there is greater potential danger than benefit in the scheme, one phase of which is so warmly commended by Mr. Olson.

In order that the subject may be before us in its wider implications, let us begin by inquiring briefly into the nature of incorporated districts and the reasons for their establishment.

These districts or some similar form of municipal corporation have been created in a number of states for a great variety of purposes. The instance most frequently met is, of course, the incorporated school district, which in a number of jurisdictions is entirely independent, or nearly so, of the municipal authorities, in governing its finances as well as in the determination of its policies. In addition to

independent school districts, various states have authorized the creation of water-supply districts, metropolitan police districts, park districts, drainage districts, sanitary districts, paving districts, fire protection districts, lighting districts, and doubtless many others.

There exist wide variations in the manner of selecting the governing bodies of these special forms of municipality, in their powers to finance themselves, in their territorial relations to cities and counties, and in the details of their structure.

While local conditions may furnish special reasons for the creation of these governmental units, in the main their establishment is due to one or more of three causes: (1) a need for more adequate financing than is permitted under existing law; (2) a situation not susceptible of adequate treatment if the arbitrary political boundaries of existing governmental units are recognized; and (3) a desire to take an important public func-

This article was submitted to W. M. Olson, the author of "The Value of Sanitary Districts" in THE AMERICAN CITY for December, 1922 (page 557). It was referred by Mr. Olson to Harry F. Ferguson, Chief Sanitary Engineer of the State Department of Health of Illinois, who writes to correct the possible impression that Mr. Olson's article represented entirely the views of the Department. At the time of preparing his article, Mr. Olson was a graduate student of the University of Illinois and had not been connected with the Department of Health.

Mr. Ferguson's letter of comment is in substantial agreement with Mr. Gruenberg's article. Mr. Ferguson points out, however, that in his opinion certain sanitary districts have been advisable and necessary in Illinois and that under the Illinois plan "it must be remembered that sanitary districts can be formed only by the vote of the people concerned; also that bonds can be issued by such districts only by vote." Mr. Ferguson agrees that it is undesirable, from the point of view of public policy, to create overlapping municipal corporations except where the needs cannot otherwise be met, but he feels that when governmental machinery is not adaptable to modern needs, there may be times when new municipal corporations will have to be called into being. The essential features of the Illinois sanitary district law and the advantages and disadvantages of forming such districts are given in an article by Mr. Ferguson in the 1922 Proceedings of the Illinois Society of Engineers.

tion "out of politics."

Evading Debt-Limit Restrictions

The article referred to has as its sub-

title, "Solving Problem of Debt Limit in the Construction of Sewerage and Sewage Treatment Works." This is illuminating, as it makes clear at once that in Mr. Olson's mind the primary purpose of creating sanitary districts is to provide a means of financing particular projects. Most state constitutions limit municipal debt rather rigidly. Creating a new municipality enables spending authorities to evade those restrictions.

No brief is here held for constitutional or statutory provisions that tend to hamper the natural and healthy development of modern cities, but it must be borne in mind that the legal creation of the "A" Drainage District to include the cities of "B" and "C," does *not* create a new group of taxpayers. The costs of building and operating the projected drainage facilities must still be borne by the citizens of the cities of "B" and "C." Accordingly, if the sole purpose of superimposing a new municipal corporation is to permit the spending of more money than is possible under the existing tax or debt limits, the situation should be faced frankly.

If the interests of taxpayers justify the existing tax or debt limits, it is just as wrong to evade the limits through the subterfuge of a second municipal corporation as it is to exceed them directly—no matter how legally correct the first proposition may be, or how legally incorrect the second may be. If the limits are not justified, they should be amended out of the law or the constitution, no matter how hard a task that may be. It is not good public morals to sidestep the issue. It is especially "yellow" citizenship to permit the evasion of a limit we have not the courage to change, and let the evasion take the form of public debts to be paid off by our children and grandchildren.

Natural Versus Political Areas

Proponents of incorporated districts, however, may point to other benefits which they hope to see secured. They argue that the arbitrary political boundaries of a city are frequently unsuited to the carrying out of projects that depend for their effectiveness on natural rather than political areas. This point is a good one, and the one that offers the greatest justification for this wide-spread movement for new forms of

municipal authority. But here again we must not accept too readily the plausible arguments. We must scrutinize the situation and see whether it absolutely demands the pyramiding of municipal corporations, or whether here also a more rational solution is not possible.

In some cases the situation is one which can and should be met by annexation of territory to an existing municipality. Where this is the case, the annexation issue should be fought to a finish. If alternatives which promise an "easier way" actually are easier, they gain in ease at the expense of civic safety.

There are cases, however, where expansion is impossible or undesirable. Moreover, there are public works enterprises in which two or more urban communities may find it advantageous to pool their activities but their community of interest does not extend to *all* municipal functions and a merger would not be justified. In such cases, it would be simpler to have the municipalities *contract* to engage in the joint undertaking, turning the management over to a commission or an individual, and bearing the initial outlay and operating costs in proportions agreed upon. This course of procedure has been taken successfully by Philadelphia and some of her suburban neighbors, and the same essential principle seems to be embodied in the California "public utility districts."

Taking Their Functions "Out of Politics"

The third argument for these independent municipal corporations or quasi-corporations—that of taking their functions "out of politics"—needs no refutation. The experience of American communities, large and small, is that "politics," in the objectionable sense, usually enters wherever the "fierce white light which beats upon a throne" does not get in its purifying rays. The less conspicuous the office or board, the easier it is for the spoilsman to use it for his fell purposes.

At this point let us digress for a moment to remark that the separate school district is in a class by itself for the purposes of this discussion. While theoretically it would doubtless be better to have but one local government with jurisdiction over a given area, there are many sound arguments for regarding public education as

requiring a separate governmental organization independent of the municipality. At some future time—not too far off, let us hope—governmental machinery will have become so simplified, so responsive, so dedicated to public service rather than to political considerations, that citizens everywhere will have no fear in entrusting the education of their children to a department of the city financed out of the common treasury, with a due sense of proportion in determining the relation of this most important function to all the other functions of local government.

But that is a question for to-morrow. To-day we must face the tendency to split the other functions of local government up among an increasing number of territorially overlapping municipalities, in order that specific projects—each desirable in itself—may be adequately financed.

The dangers are likely to be overlooked or minimized, especially by enthusiasts for physical improvement, but they are none the less real. The first of these dangers is the more obvious. It is that conferring taxing and borrowing powers on governing bodies not possessing political "high visibility," adds to the taxpayers' burden. It is perfectly clear that if the right to levy taxes or float bonds is given to a board of commissioners primarily concerned with one highly specialized project or function, their concern will be to foster their particular enterprise regardless of the total tax bill the individual citizen must bear, and they will be troubled still less by incurring debt which apparently shifts the load to future taxpayers. This danger is supposed to be anticipated and somewhat averted by constitutional or statutory limit on taxing and borrowing. But what do these limitations amount to, when the very purpose of incorporating special districts is to evade them?

Complicating Our Governmental Machinery

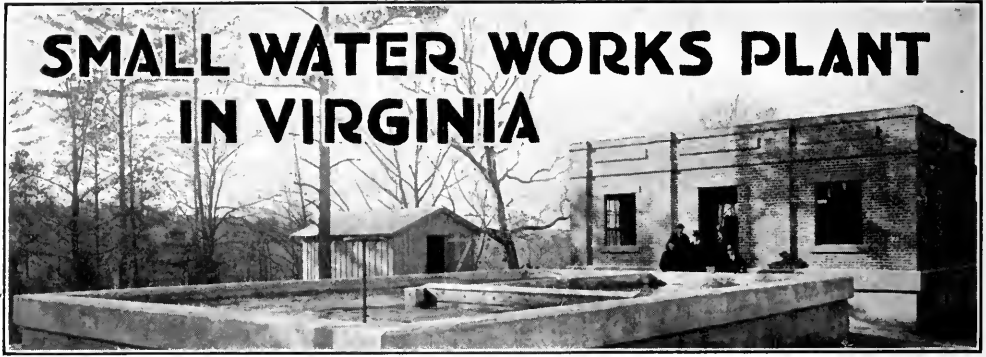
There is a far greater danger, however. It is somewhat less obvious and has received relatively little attention from publicists. This danger lies in complicating our governmental machinery to the injury of our democratic morale.

There must be some means of selecting the commissioners or other functionaries to administer the proposed new governmental unit. The choice lies between election and appointment. If they are appointed, we must ask ourselves whether the right to tax and incur debt should properly be entrusted to bodies not elected by the people. On the other hand, if such bodies are elective, we lengthen our ballot and add to the burden of the already bewildered voter another set of decisions for the exercise of his sovereign judgment!

Nor is this pure theorizing. Exhibit A is our second largest city. If there is any one who believes that any considerable number of Chicago's citizens are even aware of all the local jurisdictions presumably governed by their ballots, he must have a concept of the human mind that doesn't square with experience. It is inconceivable that even a profound student of civic matters can function intelligently through a ballot involving well over a hundred offices to be filled and affecting some twenty governmental jurisdictions overlapping the city and the county.

The human mind functions along a single track politically, just as it does in other relationships, and it will be possible to achieve real democratic government only when issues are clear, when responsibility cannot be evaded by public officials, and when the machinery of government is so free from unnecessary parts as to be understood by even that lay mechanic, the ordinary citizen. The multiplication of special municipalities and incorporated districts is a direct step in opposition to this principle.

We come back, then, to the question—shall we take the apparently easier way to carry out an immediate project? Shall we ignore fundamental principles of sound administrative organization because it seems easier to finance a certain municipal enterprise by adding a new set of cogs rather than by modernizing the apparatus itself? Let us not deceive ourselves. Before American communities adopt a general policy of "wheels within wheels," let us scrutinize critically every proposal of this character, lest our negligence create further corporate monstrosities that in future years will rise to plague us.



New Plant at Ashland, Va., a Model for Economy and Efficiency

By J. N. Ambler

President, Ambler Engineering Company, Richmond, Va.

THAT people living in small places may have drinking water filtered by modern processes is well illustrated by the recent construction of a rapid sand filter plant at Ashland, Va. The town of Ashland is situated 18 miles north of Richmond. The population, including about 200 students at the Randolph-Macon College, is about 1,700. At present the daily consumption averages only about 60,000 gallons, but it will increase gradually as the pipe distribution system is extended to serve all the homes within the corporate limits.

The water-works system was built in 1907 and the supply was taken from two drilled wells. Later, a third well was added, but, on account of the granite formation, the combined yield of the three wells was insufficient. For several years the question of a new supply has been discussed. Being accustomed to clear well water, the citizens were at first not favorably inclined to vote money for acquiring a new supply from a surface source. However, when engineering investigations disclosed that the South Anna River was the nearest and practically the only source available, a bond issue of \$70,000 was finally passed.

The South Anna River has a catchment area of about 454 square miles. The site selected for the intake and purification plant was Newman's Mill, 3.5 miles from the center of the town. This site was particularly favorable because of the existing dam and sufficient hydraulic power for

pumping. The river water is subject to frequent variations in turbidity, as are most rivers in eastern Virginia. Sewage pollution of the stream is slight, as there is only a scattered rural population on the catchment area and no towns or communities above the intake.

The purification works include a pumping-station, a coagulating-basin, two filter units, a wash water tank, a clear water basin underneath the filter building, and chlorinators in duplicate. The total capacity of the plant with the present pumping equipment is 360,000 gallons per 24 hours. The other improvements included under the bond issue were a 6-inch cast iron force main 3 miles in length, a new elevated steel tank in the town, having a capacity of 125,000 gallons, and a 82,000-gallon new steel tank erected on an old tower at the farther end of the town near the former wells.

There are two triplex pumps driven by a hydraulic turbine. The gearing is arranged so that either or both pumps may be operated. One is for raw water, and the second, a high-service pump, is for delivering filtered water to the town. Each has a rated capacity of 250 gallons per minute, but under the existing conditions it has been found best to operate at 200 gallons per minute.

The Filter Plant

The raw water supply is delivered through a 6-inch line, 150 feet long, to the

small mixing chamber at the inlet end of the coagulating basin, where the alum solution is applied. The mixing chamber is merely a concrete channel 12 inches wide, 18 inches deep and 20 feet long, with baffles spaced 2 feet apart. The flow is alternately over and under the baffles.

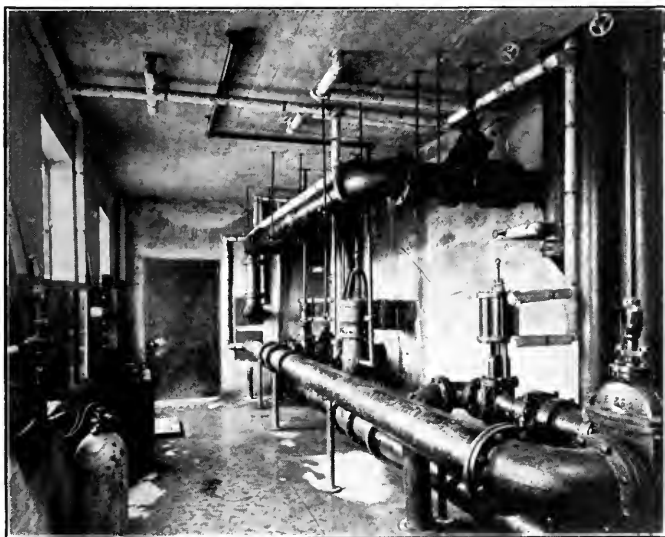
The concrete coagulating-basin has inside dimensions of 38 feet 8 inches length, 25 feet 10 inches width, and 12 feet 6 inches depth. The total capacity is 88,000 gallons, equivalent to about 7 hours' retention period under present operating conditions, which will be reduced to 2.6 hours when the filters are operated at capacity. This basin has a central baffle wall, making the distance of flow about twice its length, and also a plank stilling wall located about one-third the distance between inlet and outlet. The velocity is 0.17 feet per minute at present, and ultimately will be 0.47 feet per minute. The purpose of the stilling wall is to distribute the flow more evenly and also to increase the efficiency of sedimentation. Beginning 2 feet above the floor, there are $\frac{1}{2}$ -inch openings between the 8-inch planks. The total area of the openings is 7 square feet. For some reason not yet determined, the stilling wall appears to bring about a more rapid settling of the mud particles, as is clearly shown by the deposits of mud in front of the wall. Similar results have been noted at other plants.



POWER DAM, SHOWING HOUSING FOR HYDRAULIC TURBINE, AND IN BACKGROUND THE FILTRATION PLANT

The two concrete filters (14.5 x 9.5 x 8.5 feet) each have an effective sand surface area of 137.5 square feet, a total of 275 square feet. When operating at the rate of

2 gallons per square foot per minute, the two units have a capacity of 800,000 gallons per 24 hours. The strainer system consists of an 8-inch cast iron manifold and $1\frac{1}{2}$ -inch galvanized iron laterals spaced 6 inches apart. The laterals are perforated with $\frac{1}{4}$ -inch holes discharging downward at an angle of 45 degrees. The spacing between holes is 3 inches. The total area of orifice openings, including the umbrella strainers in the top of the manifold, is 52.5 square inches. The depth of the gravel is 18 inches, and of the sand 30 inches. Two steel troughs dis-



PIPE GALLERY OF PLANT, SHOWING DUPLICATE CHLORINATORS AND RATE OF FLOW CONTROLLERS

charge into a front gutter. The filter is equipped with Venturi controllers, combined loss of head and rate of flow gages. The steel wash tank, located 100 feet distant from the filters, has a capacity of 30,000 gallons. The rate of wash is 15 gallons per square foot per minute.

On account of the favorable location on sloping ground, the pipe gallery is well lighted by several windows—a desirable feature, particularly for small plants.

The two chemical solution tanks are constructed of wood, and each has a capacity of 315 gallons. Sulphate of alumina is used, except at infrequent intervals, when hydrated lime is required because of low alkalinity. The application of solutions is controlled by orifice feed boxes.

The clear well, underneath the filters and pipe gallery, has a capacity of 28,000 gallons. As rock was encountered, the depth

was made only 5 feet.

From the clear well the supply flows by gravity to the high-service pump located in the power-house at the mill. Chlorine is applied to the water in the clear well.

The bids were opened on June 14, 1922, and the operation of the plant began December 18. The construction work was done by the Pittsburgh-Des Moines Steel Company, and the filter equipment was furnished by the Roberts Filter Company. The designs and specifications were prepared by the author, who also supervised the construction. The engineering division of the State Board of Health has had general oversight over the operation. Samples sent to the State Laboratory weekly for examination have shown a very high efficiency in the removal of turbidity and bacteria.

ACKNOWLEDGMENT.—Photographs by courtesy of Pittsburgh-Des Moines Steel Co.

The Organization and Work of a Bureau of Street Cleaning

By J. W. Eubank

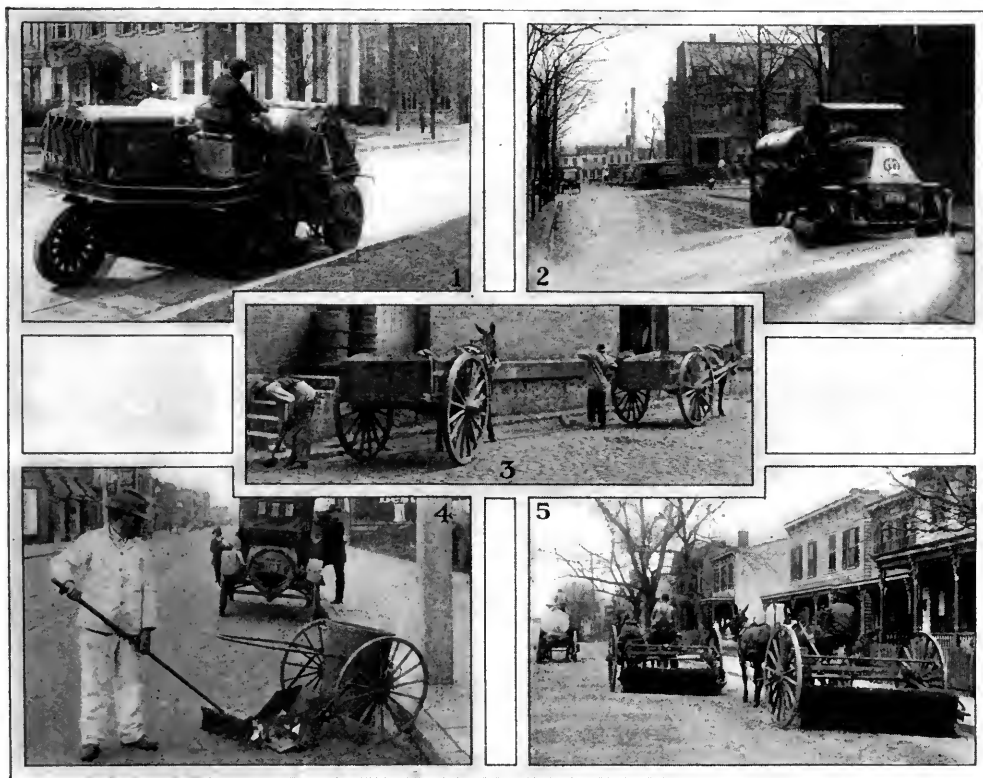
Engineer, Bureau of Street Cleaning, Richmond, Va.

THE Street Cleaning Department in Richmond, like those in many other cities, has many other duties to perform besides the cleaning of streets. It is only fair to the Department that I mention this, for readers might think the organization top-heavy, especially as this article is to be confined to the street-cleaning branch of the service only.

Street cleaning is under the jurisdiction of the Director of Public Works and has as its chief an engineer who also has charge of the maintenance of streets. A superintendent is directly in charge, and there are an assistant and two district superintendents, two foremen, three flusher drivers, three motor sweeper drivers, two horse-drawn sweeper drivers, one sprinkler driver, twelve cart drivers, twenty-two ground men, and fourteen patrolmen. The equipment used consists of two double unit flushers, one single unit flusher, one Elgin pick-up machine, one Elgin auto sweeper, one ma-

chine sweeper drawn by Fordson tractor, two horse-drawn sweepers, sprinklers, carts, hand brooms, paper-wagons, push-carts, etc.

The city owns all the equipment and teams and maintains blacksmith and machine shops where nearly all the repairs are made. The field of operation is divided into two districts, each of which is managed by a district superintendent. About 55 miles, or one-half of the paved streets, is paved with granite spalls with sand and gravel joints on a sand base. These streets are very rough and uneven and it is necessary to clean them by hand or slow-moving revolving brooms in order to do the work thoroughly. Practically all these streets are cleaned by horse-drawn and Elgin motor sweepers, sweeping the material from the center to the gutters. Ground men follow with push brooms, piling the sweepings, which are removed by cartmen. We have two gangs on this class of work, one in each



STREET CLEANING METHODS IN RICHMOND, VA.

1. Auto pick-up sweeper with gutter attachment. 2. South Bend flusher on Mack truck. 3. Two-wheel dump-wagons for collection of rubbish. 4. White Wing with can carrier. 5. Horse-drawn sweepers preceded by sprinkler

section. One is composed of a foreman, eleven ground men, one sprinkler and driver, two horse-drawn sweepers and drivers, and six cartmen in the east-end section, which is hilly. The other gang is made up of one foreman, eleven ground men, one pick-up sweeper, and seven cartmen. The carts used have a capacity of $1\frac{1}{4}$ cubic yards.

Each gang's daily schedule covers from 180,000 to 200,000 square yards. These gangs are also used on paved alleys an average of $\frac{1}{2}$ -day each week. Most of the alleys are paved with granite spalls, and this amount of work keeps them in a fairly presentable condition. As a substitute for the auto sweeper, a horse-drawn sweeper was equipped with a water-tank and perforated pipes for sprinkling and is drawn by a Fordson tractor, which has done some excellent work.

Our smooth paved streets, which consist of asphalt block, bitulithic, concrete and as-

phaltic concrete, are cleaned by Elgin motor pick-up in the gutters, followed by flushing almost exclusively. The only exception to this is in the down-town business and congested districts, where flushing is done each night. In the daytime the streets are cleaned by patrolmen, who bag the sweepings, placing the full bags on the curb to be carted away. In some of the outlying districts where the sewers are not of sufficient size to warrant flushing, the auto pick-up sweeper is used in connection with patrolmen. All our main business districts are cleaned daily before the traffic gets congested, and to assure the citizens of clean streets on Sunday a special Saturday night schedule is made, covering the most prominent boulevards and the retail business section that keeps open late.

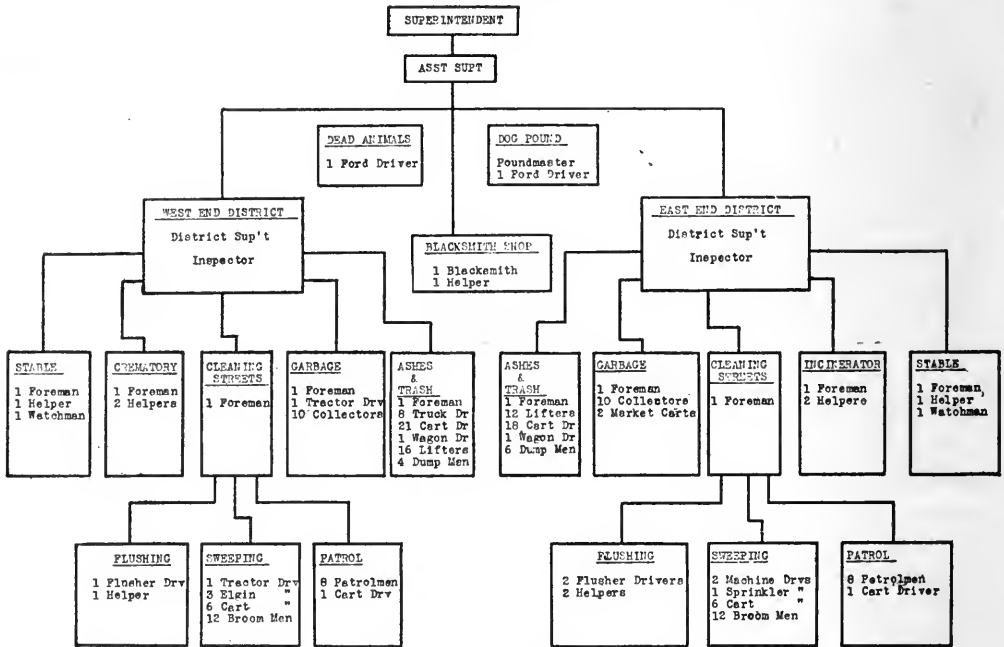
We have many miles of paved gutters with graveled streets for which no schedule is made the year round. These are cleaned from time to time either by gangs collecting ashes or by the ground men of the sweep-

ing forces whenever the schedule is completed ahead of time. A special force is made up for this work and for cutting weeds during the summer months. We have not yet found any better method of cleaning the rough paved streets than the revolving machine broom followed by ground men with hand brooms. This assures a thorough cleaning of gutters, especially around corners at street intersections and inlet openings to sewers, which is very essential.

The smooth-paved street is, however, a much simpler proposition to clean, and flushing is by far the cheapest method, but it is essential to move the heavier material

bothered with a quantity of leaves over a period of four to six weeks in the fall. These are piled by ground men and hauled away in paper-wagons. The city owns forty paper-receptacles, and one hundred others are furnished by an outside firm for the privilege of advertising. The cans are placed at various points of vantage, and the paper is given to charitable institutions for the collection and hauling.

Our schedule for cleaning is fairly constant, as we are not hampered much by either freezing weather or snow, but whenever a snow occurs the entire force has a schedule for this work. We maintain night



ORGANIZATION CHART OF THE BUREAU OF STREET CLEANING, RICHMOND, VA.

before flushing, to keep this out of the sewer basins, which we find can be done more economically and satisfactorily with the pick-up machine. Only one swath is necessary on each side next to the gutter, as most of the material lies on a strip about 10 feet wide next to the gutter. This leaves only a film of dust to be washed away by flushing. Flushing is continued in rainy weather, which is a decided advantage, as it gives a thorough cleaning, and it is easier to keep the surface clean after it has been thoroughly washed in this manner.

Owing to so many shade trees, we are

schedules on motor sweeping and flushing, but the ground men work mostly in daylight during the winter months. During the spring and summer months the sweeping is done from 10 P.M. to 7 A.M. and is followed by ground men and carts from 12 midnight to 9 A. M. We have an ordinance prohibiting sweeping trash from sidewalk into gutter after 8 A.M.

Our cleaning is very much simplified by having maps showing classes of paving, lineal distance and yardage in each block, from which scheduled routes are made for each piece of machinery for each shift.

Our costs of cleaning are based on the following prices:

| | | |
|-----------------------------|----------|---------|
| Foremen | \$125.00 | per mo. |
| Flusher drivers..... | .52 | per hr. |
| Motor pick-up..... | .52 | " |
| Horse-drawn sweeper drivers | .44 | " |
| Sprinkler | .44 | " |
| Mechanics | .62 | " |
| Blacksmiths | .62 | " |
| Patrolmen | .40 | " |
| Cart drivers..... | .40 | " |
| Ground men..... | .40 | " |

All figures for machinery, teams, etc., in-

clude feed, fuel, repairs, depreciation, and interest on outlay for the usual life. The costs of cleaning, including hauling sweepings to dump, are as follows:

| | |
|---|-----------|
| | Per 1,000 |
| | sq. yds |
| Machine sweeping followed by ground men | \$.50 |
| Motor pick-up..... | .21 |
| Flushing | .13 |
| Hand cleaning (streets and alleys)..... | 1.05 |
| Patrol | .18 |
| Gutters by hand..... | 3.38 |

Total expense for year 1922, \$85,431.54 or .478 per capita.

Number, Age and Experience of City Managers

THE Ninth Yearbook of the City Managers' Association, published April 1, 1923, lists 311 cities which are now operating under the city manager plan, or have adopted it. These range in size from McCracken, Kans., with a population of 491, to Cleveland, Ohio, with 796,841. Only three cities have abandoned the plan by vote of the people during the fifteen years it has been in use.

The number of city manager municipalities in each state is shown in the following table, the columns indicating whether the manager is appointed under ordinance or charter provisions:

| State | Chart. | Ord. | Tot. | State | Chart. | Ord. | Tot. |
|--------------|--------|------|------|--------------|--------|------|------|
| Ariz. | 1 | 0 | 1 | N. Y. | 5 | 1 | 6 |
| Ark. | 0 | 1 | 1 | N. C. | 10 | 4 | 14 |
| Calif. | 15 | 15 | 30 | Ohio | 14 | 1 | 15 |
| Colo. | 5 | 2 | 7 | Okla. | 19 | 2 | 21 |
| Conn. | 3 | 0 | 3 | Ore. | 3 | 0 | 3 |
| Fla. | 18 | 2 | 20 | Pa. | 0 | 9 | 9 |
| Ga. | 9 | 0 | 9 | S. C. | 4 | 0 | 4 |
| Idaho | 0 | 1 | 1 | S. Dak. | 1 | 1 | 2 |
| Ill. | 0 | 6 | 6 | Tenn. | 7 | 0 | 7 |
| Ind. | 1 | 0 | 1 | Texas | 19 | 5 | 24 |
| Iowa | 2 | 11 | 13 | Utah | 0 | 1 | 1 |
| Kans. | 11 | 1 | 12 | Va. | 16 | 7 | 23 |
| Ky. | 0 | 2 | 2 | W. Va. | 2 | 3 | 5 |
| Maine | 1 | 0 | 1 | Wis. | 2 | 1 | 3 |
| Mass. | 4 | 1 | 5 | Vt. | 2 | 1 | 3 |
| Mich. | 31 | 3 | 34 | | | | |
| Minn. | 4 | 1 | 5 | | 213 | 89 | 302 |
| Mo. | 1 | 1 | 2 | | | | |
| Mont. | 1 | 3 | 4 | | | | |
| Nebr. | 1 | 0 | 1 | Canada .. | 8 | 1 | 9 |
| N. J. | 0 | 1 | 1 | | | | |
| N. Mex. | 1 | 2 | 3 | | 221 | 90 | 311 |

Length of Service of City Managers

The following table shows the length of service in one city, of 219 present managers:

| | | | |
|------------------------|----|------------------------|----|
| Less than 1 year.... | 26 | 5 years to 6 years.. | 17 |
| 1 year to 2 years.... | 62 | 6 years to 7 years.. | 5 |
| 2 years to 3 years.... | 51 | 7 years to 8 years.. | 2 |
| 3 years to 4 years.... | 35 | 8 years to 10 years.. | 1 |
| 4 years to 5 years.... | 19 | 12 years to 13 years.. | 1 |

Previous Occupations of City Managers

A study made by John G. Stutz, Executive Secretary of the City Managers' Association, of the data furnished by 196 of the managers for publication in the 1923 Yearbook shows that 85 were engineers previous to their appointment. Of these, 29 had been city engineers. Others not engineers who have been previously engaged in some form of public service, include 12 city clerks, 10 mayors, 6 councilmen, 4 superintendents of water and light, and 1 chief of police. Of the rest, 9 were university professors, 7 were contractors, and the remainder came from various lines of business and professional and public service activities.

Age of City Managers

There are now managers in service ranging from 25 to 70 years in age. Data compiled for 213 managers show that the modal age, that is, the age at which there are more managers than at any other, is 39. The median age, the point where there are an equal number of cases younger and older, falls in the age 43. The distribution of ages by five-year groups follows:

| Age | No. | % | Age | No. | % |
|---------------|-----|----|---------------|-----|----|
| 25 to 30..... | 10 | 5 | 50 to 55..... | 23 | 11 |
| 30 to 35..... | 25 | 11 | 55 to 60..... | 19 | 9 |
| 35 to 40..... | 47 | 22 | 60 to 65..... | 7 | 4 |
| 40 to 45..... | 43 | 20 | 65 to 70..... | 2 | 1 |
| 45 to 50..... | 36 | 16 | 70 to 75..... | 1 | 0 |

The 1923 Yearbook* contains, in addition to the foregoing table and other features, articles on accomplishments by several city managers; the Proceedings of the Ninth Annual Meeting, held in Kansas City, November, 1922; and a list of the city managers in the United States and Canada arranged by states and cities.

* See page 633 of this issue.

"Uncle Sam's Voters"

DIRECT participation in governmental affairs by every citizen, old or young and without distinction of sex, is the object of Uncle Sam's Voters, Incorporated, a national non-profit federation that has been organized with headquarters in the Citizens' Savings Bank Building, Washington, D. C. It is de-

signed to aid in the solution of local, state, national and international problems by bringing the collective intelligence of the country to bear upon them. As a fundamental step in this process, the organization plans to establish throughout the United States, local assemblies based on the old town meeting idea.

Recreation Park Developed and Maintained by Rotary Club

By Walter Harrison

President, Oklahoma City Rotary Club

THE buying, building and equipping of a modern park and playground by the Oklahoma City Rotary Club is the fruition of three years of earnest work.

First came our Boy Life survey, which proved that this prosperous capital of 100,000 was doing little for its future citizens, and particularly for the underprivileged boys and girls. Finding a suitable acreage within reach of all was the work of months, and negotiations for the deal occupied almost another year. A packing company had secured the site when establishing a plant here, and had reserved the land for a residence section. High figures had been offered by business firms for the block for industrial purposes, but all offers were turned down until the park idea was conceived. The packers saw the value of the improvement to the whole city, and sacrificed the property at a low price.

Then the Rotary Playground Association was formed, incorporated with no capital stock and "shares of happiness" sold to

members of the club at \$50 each. Within 25 minutes \$30,000 was pledged in sums ranging from \$50 to \$300. Months of hard work followed. Club members did the plowing gratis. Others gave the grass seed. Contractors and architects gave their time. Supply men provided everything at cost. In June, 1922, the 44-acre playground was opened, with a week of play directed by a national games expert.

Down one long avenue of trees ranges the playground apparatus—seesaws, giant strides, traveling rings, horizontal bars, parallel bars, etc., everything working all of the time. An experienced playground executive is on the job the year round. The work in the park, the supervision of the swimming and wading pools, and the policing of the premises make a considerable pay-roll. The park is lighted by electricity, and warning flashes are given every evening before 9 o'clock, the closing time.

Rotary Park is the lengthened shadow of the Boy's Work Committee of the Okla-



ROTARY PARK, OKLAHOMA CITY

In the development of the park, natural advantages have been effectively enhanced by playground equipment. There is also a large clubhouse (shown at right), with showers and locker-rooms. The park contains three baseball diamonds, four tennis courts, a football field, and a cinder track



homa City Rotary Club, of which Walter C. Dean is chairman. Mr. Dean has given his services for the last two years in overseeing every detail of the development

work. The members have raised their dues \$1.50 a month to provide a special fund for the maintenance of this park for the children of Oklahoma City.

Developing a Park from Water-Works Earnings

By A. J. Sproles

Superintendent, Greenwood Water and Electric Light Plant, Greenwood, S. C.

WHEN I took charge of the water and electric light plant of Greenwood twenty-two years ago, it was without previous experience and with some misgivings, as municipal ownership was then in embryo. But my desire and ambition was to succeed in furnishing our patrons the best possible service at the least possible cost commensurate with sound business principles, with special emphasis on the water-supply, its abundance, cleanliness, purity and esthetic environment believing this last to be an important factor in ultimate success. I was not disappointed, for these are some of the contributing causes that enabled this plant to stem the tide of opposition and pass the experimental stage safely, as I believe every plant in this section employing these principles and controlled by a commission has done. "Service, rates and revenue"—in the order named—has been and still is our slogan.

Our source of supply and the pumping-station are located one mile from the city on a three-acre lot barely large enough for utilitarian purposes, but we planted every available nook and corner in bulbs, flowers, shrubs and evergreens, so that very soon an unsightly place was transformed into a beauty-spot on which our patrons delighted to gaze, the more so because in the midst of it was a reservoir, filled with clear, sparkling water from which their supplies were drawn. It is needless to say that the same reservoir, surrounded by briars, weeds, insects and reptiles, would be more repulsive than attractive.

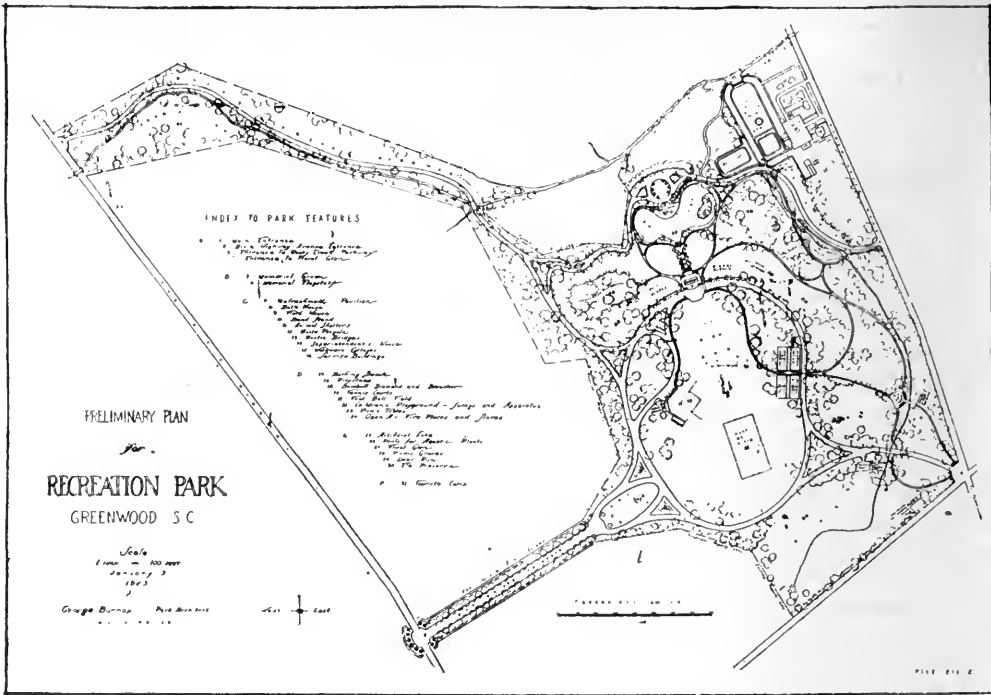
Since then we have purchased, by condemnation and otherwise, adjoining lands, a move which was necessary for further increasing and protecting our water-supply and beautifying it as well, so that our holdings now comprise a tract of 85 acres of

tablelands, wooded hills and valleys admirably suited for parking purposes.

In THE AMERICAN CITY for October, 1916, were published several views around our plant, one of them occupying the front cover page, together with a synopsis of a talk made before the Tri-State Convention at Charleston a short time before, on "Esthetics and the Water Department," in which I stressed the hope and possibility of having a park worth while started here during my tenure in office.

For several years my dream by night and longing by day have been to see this tract, for which nature has done so much, fully developed into a recreation park second to none in the South for a city of this size, believing as I do that it is a necessity for us and one of the greatest assets any town or city can have. Just a few months ago my Commissioners awoke to the situation, became even more enthusiastic than I had been, and decided on a park program covering a period of five years and involving an expenditure of \$50,000, to be paid from our surplus earnings.

I was instructed to proceed at once in having a topographic map made of the premises and to take such other preliminary steps as were necessary before actual work could begin. Among these was the securing of the services of a competent landscape artist to develop our map, make plans, specifications, etc. In answer to my advertisement in several trade publications, among them THE AMERICAN CITY, I received a voluminous response, and some personal visits. The Commissioners eventually engaged George Burnap, park architect, of Washington, D. C., to prepare the necessary plans, together with an exhibition model of the park as it will appear when completed. Mr. Burnap has personally in-



PLAN OF RECREATION PARK AT WATER-WORKS, GREENWOOD, S. C.

spected our grounds and has already submitted a preliminary plan based on a topographic map made for us by and under the supervision of Thomas W. Cothron, a local engineer of marked ability, who has since passed to his final reward. As soon as we receive the final plans we expect to begin

work under the supervision of a competent engineer and layout man whom we have already employed. In addition to the foregoing outlay, our Commissioners subscribed \$5,000 toward the cost of concreting one of the leading highways which passes our property.

Respiratory Protection in Street Manholes Is to Be Studied

WORKERS in street manholes for telephone and electric power conduits, sewers, gas and water-mains, often encounter irrespirable atmospheres due to leakage of artificial or natural gas, sewer gas or gases caused by electrolysis. Inquiries received by the U. S. Bureau of Mines, and conferences between engineers who have to deal with manholes, and mem-

bers of the Bureau have disclosed the need at times of respiratory protection for workers in manholes. It is planned to secure samples of contaminated air from manholes and to test hose masks in them. Recommendations for protection of workers in manholes will be published. This experimental work is being conducted at the Bureau's Pittsburgh, Pa., experimental station.

Dim Lights a Peril to Life in Streets

Life and property are nightly endangered on many of the streets and highways of the District of Columbia, because of inadequate street lighting. Dim lights in many instances cast deep shadows, because they are located close to large trees, making it difficult for the motorist or pedestrian to see far enough ahead to avoid accidents.

—Washington, D. C., Star.

Forward Steps in City and County

Sound Amplifier and Longer Season This Year for St. Louis Open-Air Municipal Opera

ST. LOUIS, Mo.—Determined that at least half a million citizens of St. Louis and their guests shall attend municipal opera this season, the Municipal Theatre Association, which, as a civic enterprise, is to provide a ten weeks' season of comic opera in the city's open-air theater in Forest Park, is installing a new sound-amplifying device at a cost of \$12,500.

The Municipal Theatre seats 9,270 people at each performance. But in past seasons there has been difficulty in filling the 25-cent seats. Although every \$2, \$1.50, \$1, and 50-cent seat and every one of the 1,600 free seats at the rear of the auditorium has usually been filled, a big block of cheaper seats often has remained empty. This is believed to be due to poor acoustics through the area of the cheaper seats, which will be overcome by the new amplifying device, making every seat in the huge amphitheatre available to music lovers.

"Every resource of the Municipal Theatre shall be utilized for the summer entertainment of St. Louis," says Mayor Henry W. Kiel, President of the Municipal Theatre Association, thus voicing the civic spirit which has led to an extension of two weeks in the summer season of 1923 and a change to seven performances each week instead of six as in the past four years.

The ten weeks' season extends from May 28 to August 7. It will present a repertory consisting of "Naughty Marietta," by Victor Herbert; "The Fencing Master," by Reginald DeKoven. "Wang," by Woolson Morse; "Prince of Pilsen," by Gustav Luders; "The Bat" ("Die Fledermaus"), by Johann Strauss; "The Merry Widow," by Franz Lehár; "Sweethearts," by Victor Herbert; Lehár's "Gypsy Love," "Spring Maid," by Henrich Rheinhardt; and Johann Strauss' "Gypsy Baron." A month before the opening the advance subscription for seats this season was nearly \$70,000.

A bigger and better cast of well-known

professional singers has been engaged, and more expensive productions are to rule for 1923. For a second season, an all St. Louis chorus will be used. Since January 1, more than 300 St. Louis boys and girls have been receiving free tuition in the Municipal Opera Chorus Training School in preparation for their season's work. Early in May they were examined by the stage director and musical director, and from their number a chorus of 100 was chosen.

The half-million attendance expected through the summer season, although a big increase in numbers over last year, means only an increase of 21 per cent in attendance at each performance—and that is less than the normal increase from year to year in the four years of municipal opera in St. Louis.

PAUL BEISMAN,
Publicity Manager, Municipal Theatre Association.

Central Purchasing for City and County

SAN FRANCISCO, CALIF.—On May 17 there went into effect an ordinance providing for the organization of the Bureau of Supplies of San Francisco, which had been authorized by a charter amendment adopted at the election in November, 1922. As stipulated in the ordinance, the Bureau will be operated under the direction of a Purchaser of Supplies to be appointed by the Board of Supervisors of the City and County of San Francisco.

All supplies of every kind required by the several departments of the city government, except the Public Library, are to be purchased by the Bureau of Supplies upon the receipt of requisitions from such departments. The Purchaser of Supplies is given the authority to sign contracts for supplies for future delivery and payment, not exceeding \$1,000. Any contract calling for an expenditure in excess of this amount must be entered into jointly with the head of the department submitting the requisition.

The ordinance requires that all purchases made in the open market, except of

patented or proprietary articles, fresh fruits and vegetables, and purchases of minor amounts, shall be based on at least three quotations. A record of these quotations and a register of all informal awards will be kept by the Bureau of Supplies.

Authority is given to the Purchaser of Supplies to prescribe tests for the determination of the quality of all proposed purchases or deliveries, when such quality can be accurately determined by tests. The laboratory facilities of the city, and the services of the technical staff connected with that department, are to be placed at the disposal of the Bureau of Supplies for making whatever tests are required.

J. S. DUNNIGAN,

Clerk, Board of Supervisors of the City and County of San Francisco.

Street Shower-Baths

BALTIMORE, MD.—An interesting part of last summer's work of the Baltimore Free Public Bath Commission was that connected with the designing and operating of the street shower-baths. In the beginning, several rather elaborate structures were planned, consisting of platforms in several sections, on which five and six shower-heads were placed. A short try-out made it evident that for general utility,

economy of management, etc., these would not do, so after considerable experimenting, a simpler device was adopted.

The final type, here illustrated, consisted of two pieces of pipe arranged in a T-shape, the cross-piece being 1-inch pipe, 8 feet long, and the center piece, 2-inch pipe about 5 feet high, held by a flange 2 inches in diameter. On each end of the pipe an ordinary circular garden spray, turned downward, was placed. In order to get a large volume of water, additional holes were punched in the spray. Water was secured by connecting with the street fire plug, by reducers. This simple device could be operated by one man, and was easily moved with small expense.

Our first shower was placed in commission on July 13 and the last on August 19, and during this period the showers were operated in twenty-one places. From the beginning it was thought best to confine the use of the showers to children of about thirteen years and under, and from the experience gained we feel that this was a wise provision.

As a result of the season's experience, we learned that only when the weather was warm and sticky were the showers used in large numbers. Frequent changes of loca-



TYPE NO. 3 OF STREET SHOWER-BATH, USED IN BALTIMORE DURING THE SEASON OF 1922 AND FINALLY ADOPTED AS A STANDARD TYPE

tion were necessary, as the children soon tired of the novelty. As a break in the monotony of life in crowded sections on hot days, the showers have their place, but from the standpoint of hygiene and cleanliness, we feel that the better development is an extension of shower-bathing in the public schools and bath-houses.

ROBERT F. G. KELLEY,
Superintendent, Baltimore Free Public Bath
Commission.

An Emergency Sewage Disposal Plant

BRIARCLIFF MANOR, N. Y.—The accompanying picture represents the trough and supply pipes for sewage disposal designed and built by Patrick Manahan, Superin-



**SUPPLY PIPES AND TROUGH IN BRIARCLIFF MANOR'S
EMERGENCY SEWAGE DISPOSAL PLANT**

tendent to the Municipal Board of Briarcliff Manor.

In 1920 the sewage of Briarcliff Manor had increased beyond the capacity of the disposal beds which had served the village for many years, and it became necessary to add more facilities for use until the new and modern permanent system could be installed.

The apparatus was designed to disintegrate and aerate the sewage effluent before it had time to putrefy. The wood trough into which the effluent is pumped is about 450 feet long. It is horizontal and V-shaped in section, and perforated with small holes near the top every two or three feet, so that the small streams of effluent may be discharged onto flat stones on the ground, which serve to scatter it for the

sake of better aeration. Thence it trickles over the ground and disappears from 12 to 30 feet from the trough, according to the quantity pumped up at one time. The soil is a sandy clay, and after twelve months' use, excepting for a rank growth of weeds, no odor or other sign of sewage was visible more than 30 feet from the trough.

The effluent is raw sewage, the solids from which are retained in a settling-tank in the valley. It is raised to the trough by a 10-horse-power electric motor and pump about 40 feet below. It has little odor when pumped up, and before it has time to putrefy it is dissipated by the sun and air and soil.

This trough was built to purify about 50,000 gallons of effluent daily; but for some time before the new disposal plant was completed, it took care of all the sewage of the village, about 200,000 gallons a day. The cost of construction was about \$250.

In the twelve months of its operation no reason was discovered why it could not dispose of the village sewage effectively for an indefinite time. It would have been easy to build another trough farther up the hill, so that the two could be used alternately. But it was so simple and efficient that

people would hardly believe in it, although it had done its work for all those months. Besides, they could see it, and it is only a few hundred feet away from several houses. So it has had to give way to a more permanent (but not more scientific) plant, designed on similar principles for level ground instead of a side hill by Mr. Manahan and Clyde Potts, and located well out of sight.

HAROLD A. CAPARN,
Member Briarcliff Municipal Board.

Salem Plants a Memorial Grove

SALEM, MASS.—Arbor Day, April 28, was observed in Salem by the planting of a memorial grove of fifty-nine red oak trees at the Salem Willows Park. A tree was set out for each enlisted man from Salem who was known to have given up

his life during the period when the United States was at war with the Central Powers, or from the spring of 1917 until July 4, 1919. This project was conceived and carried out by the Board of Park Commissioners through its Superintendent, himself a veteran of the World War.

The grove is located in the shadow of Fort Lee, a Civil War fort, on ground where war gardens were planted during the late conflict. The ceremonies were very impressive, including addresses by a member of the Park Commission, the Mayor, and the Commander of the American Legion, prayer by the Chaplain of the Legion, and music by the 102nd Field Artillery Band. Members of the local Post of the American Legion attended in uniform, and the families of the heroes were present in large numbers. The most impressive part of the affair was the actual planting of the trees by the Gold Star mothers and other members of the families of the deceased heroes, assisted by ex-service men and the Park Department employees.

Each tree is labeled with a number on the ground and also on a plan kept on file with the list of names. When the trees attain a suitable size, permanent markers will be attached.

OLIVER G. PRATT,
Superintendent, Park Department.

Rotary and City Club Help
Dental Clinics

PORTLAND, ORE.—A Minstrel Show with “teeth” in it was given here in March by the Rotary Club of Portland for the benefit of the dental school clinics which had been established in 1920 and which seemed in danger of being discontinued for lack of money. The show—one of the best amateur theatrical performances ever staged in Portland—brought a net return of \$5,500,

insuring adequate continuation of the clinics so ably begun by the Junior Red Cross.

During the school year 1921-1922 there were 29,322 pupils examined and over 80 per cent were found to have defective teeth. At a cost of \$7,837 the clinics made treatments that are estimated worth \$20,500 in money value alone. The improved health of the children meant much more. Absences from school were lessened, sickness decreased and the number of repeaters were reduced by one-third—a repeater in the Portland schools costs the district \$65. The Rotary Club recognized the worth of the clinics to the city and rallied to their support.

The plan for the year is to conduct four clinics at an estimated cost of \$1,800 each. One is supported by the city, another by the Junior Red Cross, and the two others by civic organizations, the Rotary fund being the largest contribution. A large number of the school children receive free examination and treatment. In other cases the child is referred to the family dentist.

The need having been demonstrated, the ultimate aim is, of course, to have the clinics supported by public finances. To this end, a bill was introduced at the recent Oregon Legislature which authorized school boards of the state to provide for the dental inspection and treatment of public school children. The bill failed, but the Rotary Club, City Club and other organizations came to the rescue with an amended bill which in its application is effective only in Portland. This bill was passed. The next move will be to place it in operation; and with such spirit as manifested by the Rotarians present in the community, that seems easily possible.

ROBERT W. OSBORN,
Executive Secretary, The City Club of Portland, Ore.

Mileage of Paved Streets and Alleys in Oak Park, Ill.

THE total length of paved streets in the corporate limits of Oak Park, Ill., is 98.25 miles, of which 88.44 miles, or 90 per cent, is paved as follows:

| | Miles |
|-----------------------|-------|
| Asphalt concrete..... | 36.23 |
| Macadam | 22.17 |
| Brick | 15.04 |
| Sheet asphalt..... | 15.00 |
| Total | 88.44 |

The total length of public alleys in the village is 45.62 miles, of which 11.42 miles are paved, as follows:

| | Miles |
|---|-------|
| Portland cement concrete..... | 10.44 |
| Reinforced portland cement concrete | .22 |
| Brick | .33 |
| Limestone macadam..... | .24 |
| Asphaltic concrete..... | .19 |
| Total | 11.42 |

Chamber of Commerce Activities in Public Affairs

National Summer School

CHICAGO, ILL.—The third session of the National School for Commercial Secretaries will be held August 19 to September 1 at Northwestern University, Evanston, Ill. In many ways the curriculum and scope of the School will be broadened and its facilities improved, the program and arrangements giving every promise that the highly successful record of past years will be maintained or excelled.

Men and women interested in and qualified for commercial organization administration—both those who are engaged in this field of service and those who wish to secure special training for it—are invited to enroll. Beside the courses for first-year and second-year students, following the program hitherto developed, the number of elective courses on organization subjects has been increased so that those who return to the School for the third season, as many will do, will be offered an ample number of new subjects for the continuation of their studies.

Among the fundamental courses to which students of all grades are eligible, four subjects being chosen by each, are the following, which are new this year:

| | |
|--|--------------------------|
| Salesmanship | Social Problems of the |
| Economic Study of Industrial Development | Community Transportation |

To these are added the following, which are retained from previous years:

| | |
|-------------------------|----------------------------|
| Psychology | Marketing and Distribution |
| Economics | Effective Speaking |
| Business and Government | Journalism |

The "seminars" for second and third year students (also elective) include the following subjects, which are new:

| | |
|------------------------------------|---|
| Problems of the Small Town | Town and Country Market Building |
| Principles of Executive Management | Civic Work of the Business Organization |
| Getting Close to Your Members | Community Traffic Problems |
| Functions of State Chambers | |

And the following, which are repeated:

| | |
|---------------------------------|------------------------------------|
| Committee Operation | Organization Finances |
| Membership Building | Retail Trade |
| Organizing the Secretary's Work | City Planning (Housing and Zoning) |

The first year technical courses have been changed but slightly in subject matter, although there will be further revision of text-book material. These subjects are:

| | |
|--------------------------|-----------------------|
| Organization and Program | Publicity |
| Getting Results | Commercial Activities |
| Relations with Members | Industrial Activities |
| Membership Building | Civic Activities |
| Finance | Office Administration |

The American City Bureau, which last year discontinued its Summer School of Community Leadership, formerly held at Madison, Wis., in favor of the National School, again tenders its cooperation to the Board of Managers and will assist in every way possible to promote the success of the National School.

Those who desire to attend the National School may obtain information and enrollment cards by addressing Board of Managers, National School for Commercial Secretaries, 10 South LaSalle Street, Chicago.

Western Summer School

PALO ALTO, CALIF.—At Stanford University, July 29 to August 4, will be held the Third Western Summer School of Community Leadership. Professor Edwin A. Cottrell will act as Director of the School, the Committee on Arrangements consisting of representatives of the secretarial profession in California and other western states, and of the California Development Association and The American City Bureau.

In planning this year's program, special consideration is being given to first-year, second-year and third-year students. It is hoped to organize a continuous course of at least three years which will give the students an opportunity of getting the fundamentals of chamber of commerce work and of receiving a certificate after satisfying certain examinations. Aside from such special courses as those in psychology and public speaking, the subjects to be considered will group themselves chiefly into those relating to the fundamental organization of a chamber of commerce, business activities, social activities and civic activities.

The tentative program embodies what might be called a four-fold type of study for each day of the school: first, class discussion of two hours, each led by one man, and followed up by several who are selected for their knowledge of the particular problem before them; second, an assembly period for all members of the school, to be addressed on some one subject by the biggest man that can be obtained in that particular line; third, a dinner talk to be given by some outstanding speaker on a particular subject; and fourth, luncheon groups at noon and smoker discussion groups in the evening, which will follow generally the topic taken up either at the assembly or the dinner of that particular day.

In order to crowd as much as possible into one week, the school this year will begin on Sunday and there will be a concentrated program from 8.10 in the morning to at least 9 o'clock in the evening each day, with a recreational period from 4.15 until 6.00. Additional information may be secured from Professor Cottrell, at Stanford University.

Prizes to Stimulate Civic Pride

STEVENS POINT, WIS.—The Chamber of Commerce of Stevens Point has been promoting a series of prize contests to stimulate community cooperation for "The City Worth While." The civic flag here shown is the result of the contest recently inaugurated by the Chamber. The winner is Frank V. Nalborski, a local young man who has been interested in civic subjects.



THE CIVIC FLAG OF STEVENS POINT, WIS.

White letters on a blue ground. The colors of the shield are red and white

Nearly 150 contestants entered the race for the award of \$25 in gold.

The design will undoubtedly be accepted by the Common Council. The Chamber has secured the cooperation of the Women's Club, which intends to make a flag 20 by 30 feet in size. Each woman who sews on it is to provide herself with a silver thimble engraved with the date and significance of the event. The thimble may then be passed

down to posterity and become a valuable heirloom.

The latest contest to be staged by the Chamber of Commerce is for the building of homes rather than mere houses. A bronze tablet has been offered as a prize for the most beautiful and homelike home which is built during 1923, and one for each year thereafter. This idea has taken exceedingly well with the building material and hardware firms of the city, and the cost of the bronze tablet will be borne by these merchants. A preliminary contest will determine the design of the tablet.

MORGAN CHASE,
Secretary, Stevens Point Chamber of Commerce.

Because and If

It is too late to correct this IF in Dover, Ohio, but similar mistakes will be prevented if zoning is adopted in that city:

"The Council has passed, on two readings, the Chamber's ordinance, creating a City Plan Commission. IF a zoning ordinance were effective now, we could stop the erection of a gas-filling station in the heart of the residential district."—Dover Chamber of Commerce, *Action*, April 27, 1923.

This BECAUSE, if corrected, will involve heavy expense. Memphis, Tenn., has learned its lesson, however, and is giving attention to street planning, within and beyond the city's limits:

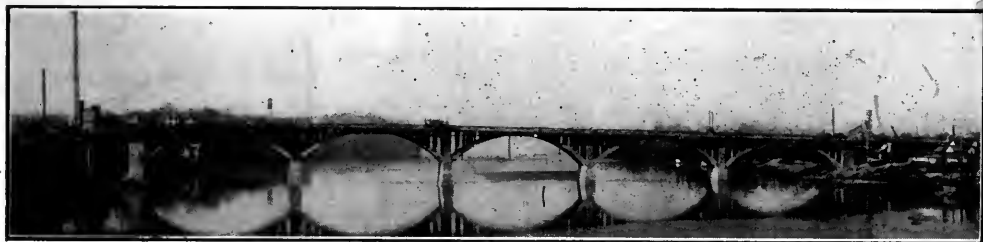
"Cut-offs and lack of continuity of some of the streets of Memphis exist BECAUSE there was no City Planning Commission when these streets were planned. One subdivision paid little heed to street connections with another subdivision.

"The Mayor and the county authorities are now at work on a plan to regulate the laying out of subdivisions in the present suburbs so that the rights and convenience of the public will be recognized.

"At a meeting of the Board of Directors of the Chamber of Commerce held March 28, the support of the Chamber was pledged in the following resolution which was unanimously passed:

"The Directors of the Chamber of Commerce heartily approve the action of the Mayor and the County Commission in recommending the passage of a law to regulate the laying out of streets and subdivisions in Shelby County within three miles of the present city limits and will cooperate in any way possible to secure the passage of such a law."

"The rapidly building territory outside the present city limits is certain to one day be part of Memphis proper. The people of the city as well as the residents in the districts just outside have every reason to favor logical and orderly development instead of haphazard growth without plan."—Memphis Chamber of Commerce *Journal*, April, 1923.



LITTLE ROCK'S MEMORIAL BRIDGE NEARING COMPLETION

Opening Celebration of Little Rock's Memorial Bridge

LITTLE ROCK, ARK.—On March 15, the new Broadway Bridge, dedicated to the soldiers of the World War, was opened with a celebration sponsored by the Little Rock Board of Commerce and made possible by the generosity and civic pride of the citizens of Little Rock and North Little Rock.

An effective feature of the celebration was the flood lighting of the bridge at night, financed by the utility companies of Little Rock and designed by the Little Rock Electric Club. Four batteries of flood lamps were used, and four individual flood light units spaced apart from the batteries. Each battery consisted of two 1,000-candle-power and three 500-candle-power flood-lighting units. These batteries were placed about 100 feet from the bridge on both sides of the river and on either side of

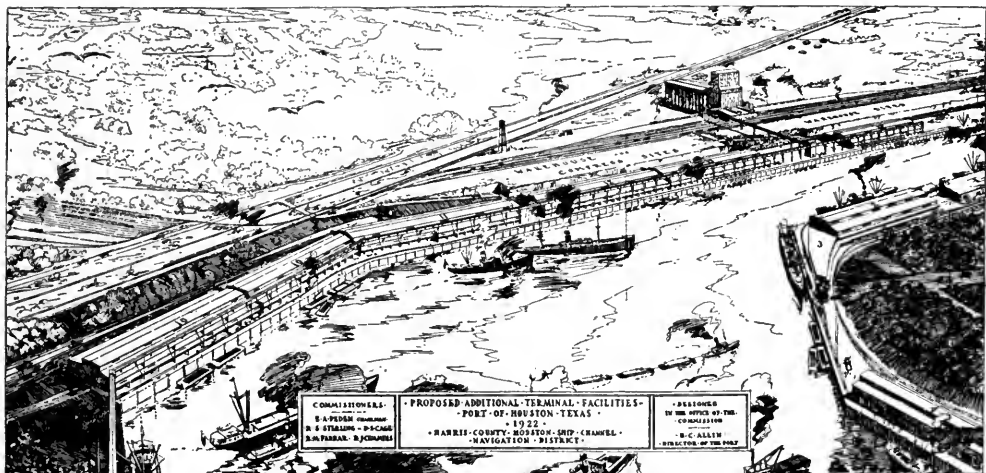
the bridge. In order to bring out the center span of the bridge, an additional flood light was installed about 250 feet from the bridge on either side and on each side of the river.

The new bridge connects the cities of Little Rock and North Little Rock, Ark., over the Arkansas River. It is a reinforced concrete structure, designed by Ira G. Hedrick, of Kansas City, Mo., and constructed by the Missouri Valley Bridge & Iron Company. The length of the bridge, including approaches, is 2,873 feet; from bank to bank it is 2,549 feet. The total cost was approximately \$1,000,000.

C. F. HOLLAND,
Manager, Little Rock Board of Commerce.

Extension of Port Facilities

HOUSTON, TEXAS.—The Houston Chamber of Commerce took an active part in the recent \$4,000,000 bond issue campaign for the extension of the port facilities of Houston. All civic organizations supported



HOW HOUSTON WILL LOOK WHEN ADDITIONAL PORT FACILITIES ARE CONSTRUCTED

The improvements will include six additional wharf units, 500 x 150 feet, of modern construction, with steel transit sheds; a 5-mile extension of the harbor belt railway on the north side of the channel, and a classification yard at the turning-basin; a grain elevator with an initial capacity of 1,000,000 bushels and a storage capacity of 9,000,000 bushels. The new wharves will add 3,123 feet of water frontage to the present terminal facilities of the port. The improvements will also include the installation of additional handling devices for a great variety of cargoes.

the campaign, and to the Chamber of Commerce was assigned the task of sending "sales letters" to the voters of the city. At intervals of about ten days, three different letters were mailed, each outlining as completely as possible not only why votes should be cast for the bonds, but also why a maximum number of votes should be registered. A total of 120,000 letters were prepared and mailed by the organization.

The Chamber further participated in the campaign by conducting a vigorous publicity campaign through the local newspapers as well as through its official publication, and also furnished from time to time speakers to appear before luncheon clubs and at rural community gatherings.

The bond issue was passed by a vote of five to one, which was the goal set by the proponents of the measure. The picture at the bottom of page 611 gives details of the proposed port improvements.

BURT RULE,
Publicity Director, Chamber of Commerce.

A Jail Transformed into a Seminary

HUNTINGTON, UTAH.—When Huntington passed a municipal prohibition law, about fifteen years ago, its saloon became a civic nonentity. As a natural consequence, the town jail also lost its utility in the public service and for a number of years thereafter it remained an idle nuisance in the midst of the town's social and business life. But just a few years ago the city officials came to the realization that the ex-jail offered an excellent opportunity to become a positive and contributive benefit to the town. Acting on that idea, its coarser environment was removed, the high board fence was torn down, the greasewoods growing around were cut away, and the iron-barred windows and other jail features were transformed into conveniences

which entirely eliminated all suggestion of its former status. The purpose was to make it an office building in which the town business could be efficiently taken care of, and for that purpose its central location gave it an added value.

A year or two later Huntington was offered a liberal contribution of books from the Government as the nucleus for a library, on condition that a suitable building be provided in which to place them. The city officials promptly accepted the offer and

supplied the building with all the accessories of a convenient library. Then they made it a public utility in still another sense by establishing it as a school of religious instruction, serving as a church seminary supplementary to the high school.

Huntington feels that it has done a commendable and unusual thing in transforming its jail into a reformatory influence on an entirely different basis.

LAMONT JOHNSON,
Secretary, Huntington Commercial Club.

Why You Should Own Your Home

1. It helps you to save.
2. It is a good investment.
3. It gives you a better standing in the community, both socially and in a business way.
4. It increases your self-respect, and is a stimulus to ambition.
5. It improves your credit.
6. It makes your family happier, and improves your home life.
7. It is a parental duty, emphasizing thrift and training children to higher estimates, increasing their respect for the home and making sweeter the home memories.
8. It gives you and your family greater interest in the home.
9. It relieves you from the yoke of the landlord.
10. It is a National and community asset materializing in a contented, progressive and patriotic citizenship vitally interested in public welfare and unaffected by false propaganda.

Why You Should Not Own Your Home

PUBLICITY FOR HOME OWNERSHIP

These terse arguments for home ownership, and the even terser reasons "Why You Should Not Own Your Own Home," are reproduced from an article, "Let's Make Dallas a Home-Owning City," published in the April, 1923, issue of the official publication of the Chamber of Commerce of Dallas, Texas. The article gave effective stimulus to the "Own Your Home Exposition," held April 6-15 under the auspices of the Dallas Real Estate Board.

The Ideal Chamber of Commerce Secretary

As defined by F. Roger Miller, of Macon, Ga., President, Southern Commercial Secretaries Association.

"The secretary: A student and worker in the laboratory of human life; a teacher of the creed that men are of value in the world to the extent that they are able and willing to work in harmony with other men; a leader whose mission is to organize and inspire the unselfish cooperation of progressive men and women in the mutual cause of community development; a civic engineer whose business is the building of better cities, better citizenship, and a better country; a business manager who administers the affairs of the organization, interprets its policies, and directs the work of its staff; an executive who serves unselfishly the best interests of the organization and the community it represents."

Ohio and Massachusetts Enact Legislation for Regional Planning

Ohio Authorizes Regional or County Planning Commissions

IN Ohio the Legislature has enacted a law, drafted by Alfred Bettman, of Cincinnati, and fathered by the Ohio State Conference on City Planning, which provides that:

"The city planning commissions of any municipality or group of municipalities, and the county commissioners of any county or counties in which said municipality or group of municipalities is located, or any adjoining county or counties, may cooperate in the creation of a regional planning commission for any region defined as may be agreed upon by said planning commissions and county commissioners, exclusive, however, of any territory within the limits of a municipal corporation not having a city planning commission. * * *

"The board of county commissioners of any county may and, on petition of the city planning commissions of a majority of the municipalities in such county having such planning commission, shall provide for the organization and maintenance of a county planning commission."

Under the new law, a regional or county planning commission will be authorized to make plans and maps of the region or county respectively, showing the commission's recommendation for systems of transportation, highways, park and recreational facilities, the water-supply, sewerage and sewage disposal, garbage disposal, civic centers and other public improvements which affect the development of the region or county respectively as a whole or more than one political unit within the region or county and which do not begin and terminate within the boundaries of any single municipality.

Plans thus prepared may be adopted by the city planning commission of any municipality and the county commissioners of any county in so far as they affect their respective jurisdictions. Thereafter the regional or county plan shall have the same force and effect within such municipality as is provided by law or charter for plans

prepared by the local planning commission; and in non-municipal territory in a county adopting the plan no public building, roadway, bridge or viaduct or other public improvement or utility (whether publicly or privately owned) whose construction or location would constitute a departure from the plan shall be constructed or authorized by the county commissioners except by unanimous vote.

A Division of Metropolitan Planning for Massachusetts

ON May 17 Governor Channing M. Cox, of Massachusetts, signed the bill to which reference was made in THE AMERICAN CITY's editorial for May, "Beyond the City's Limits," and which creates a Division of Metropolitan Planning within the Metropolitan District Commission of Boston. The act is based upon a proposal submitted by Representative George L. Richards, of Malden, and had the active support of the Joint Committees on Metropolitan Planning of the Boston Chamber of Commerce, of which Judge Robert Walcott is Chairman.

By the terms of the new act the Division of Metropolitan Planning is put in charge of seven commissioners who will be unpaid for this service, though three of them will be in receipt of salaries from the state and one from the city of Boston. The act provides that:

Said division shall investigate transportation service and facilities within the metropolitan district, which shall consist of all the cities and towns in either of the metropolitan sewer districts, or the metropolitan parks district, and the coordination thereof upon highways, roads, bridges, waterways, railroads, street railways and other arteries of traffic; what, if any, use of existing facilities of carriers by one or more of such methods can and should be made by others; the manner of effecting such correlation and what improvements and new facilities should be provided for a comprehensive and coordinated development of transportation for said district. It shall confer with the

local planning agencies in the district with regard to such projects as are not of an exclusively local character. It shall recommend the method of executing and paying for the

same, and shall make such maps, plans and estimates of cost as may be needed for its investigations and reports, and may employ such assistants therefor as it deems necessary.

Regional and Metropolitan Planning

By George B. Ford

CONTROLLED as it is by our state laws, the planning of cities and towns has been confined so far to their often arbitrary corporate limits, regardless of the fact that the metropolitan area as an economic unit bears little relation to these limits.

Therefore, the logical next step in city and town planning is to find a way of controlling and directing the development of the whole contributory region in the common interest of all living within it. Study of this subject has brought us to the following general conclusions:

1. The character and direction of growth of contributory areas beyond the city limits should be controlled by a Metropolitan or Regional Planning Commission or, where such areas lie entirely within a county, by a County-Planning Commission.

2. Such a Commission should include official delegates from each municipality affected. Each municipality should contribute to the support of the work on a pro-rata basis, or if that is not feasible, it should be supported by private subscription.

3. There should also be a Citizens' Regional Plan Committee composed of representatives of the leading civic and economic organizations of each community within the area. This Committee should cooperate with the official Commission at every stage of its work. This Committee should interpret the official plans to the public and to the authorities in their respective towns and should aid in securing local backing and support. The Committee should also act as a watch-dog over changing official commissions to maintain the continuity of the plans.

4. The official Commission should cause a regional plan to be made which should

include every physical feature which could affect more than one municipal unit. It should be made for many years to come and such a plan should be officially recognized by each of the municipalities affected by it.

5. No project affecting more than one community, be it for a thoroughfare, bridge, transit line, railroad, water-front development, park, public or private reservation, subdivision, building code or zoning ordinance, should be executed without having received the sanction of the Regional Commission as well as of the local bodies affected.

6. All physical improvements affecting more than one community should be paid for by prorating the cost among the municipalities interested.

7. If in a given case the state constitution or laws prevent or hamper any of the above operations, steps should be taken to amend them.

8. Serious consideration should be given to the causes and the effects of concentration of population and, in so far as an undue "load on the land" is found to cause harm, the effect should be mitigated by regulation, and means found of encouraging decentralization.

9. Guesswork and unscientific judgment should be reduced to a minimum in regional as well as in city planning. Every plan recommended should be the logical deduction from a quantitative as well as a qualitative analysis of all of the contributory facts.

10. Everything possible should be done to counteract the sordidness of most larger agglomerations and to bring back to the environment of the city dweller the charm that he craves.

ACKNOWLEDGMENT.—From a paper read at the National Conference on City Planning, at Baltimore, April 30, 1923.

Fire Risks in Department Stores

By F. W. Fitzpatrick

WE Americans are a funny lot—we have to take our lessons in homeopathic doses. We don't seem to be willing to grasp big general facts, but prefer to muddle along absorbing one little detail after another. In the matter of fire, for instance: we fire prevention specialists know how things should be and we shout our heads off telling people about it; but it all cuts little ice, so to speak, until some terrible fire comes along and accentuates the points we have been making—but only in that class of building in which the fatal fire occurred. That is the agonizing part of it all.

After the Iroquois Theater fire we could get city after city to stiffen up the fire rules, building ordinances and everything else, but only in regard to theaters. Nothing was too drastic—for theaters. But could we get any substantial betterment in schools or any other class of building? No. The terrible lesson of loss of life was in a theater, therefore theaters could be improved, but nothing else!

Then the Collingwood School disaster, another appalling fire. And how everyone scuttled around to do what we had been praying for in the betterment of school construction—the safety of the children! Lesson number two.

We have been begging for better rules and greater safety in the great department stores, but all that has fallen upon deaf ears—for there has been no horrible lesson yet, and we absolutely decline, we Americans, to do anything until we have been jolted into doing it.

I have been expecting a mean fire in a department store—it is logically the next big lesson due us. So many such buildings have great open internal courts many stories high. A fire in a lower story would spread like lightning to the top, through the highly inflammable goods, the smoke doing more harm, perhaps, than the actual fire.

Are the sprinkling systems regularly inspected and tested? What about hose and fire extinguishers? Some hose looks to me as if it had been in place for years and would hold water about as well as a wire basket.

Are the clerks drilled for fire—what to do, how to handle apparatus, direct people, etc.?

Are the people kept moving in the aisles, or are they allowed to jam around bargain counters?

How clear are the aisles kept of chairs and extra tables and such obstacles to easy exit? How much has been done to direct people to exits? The other day I was in a great store, came down in an elevator, and had to wander about several minutes looking for an exit. How would it be in a panic if someone cried "Fire!" even if no fire nor smoke were there to do the harm?

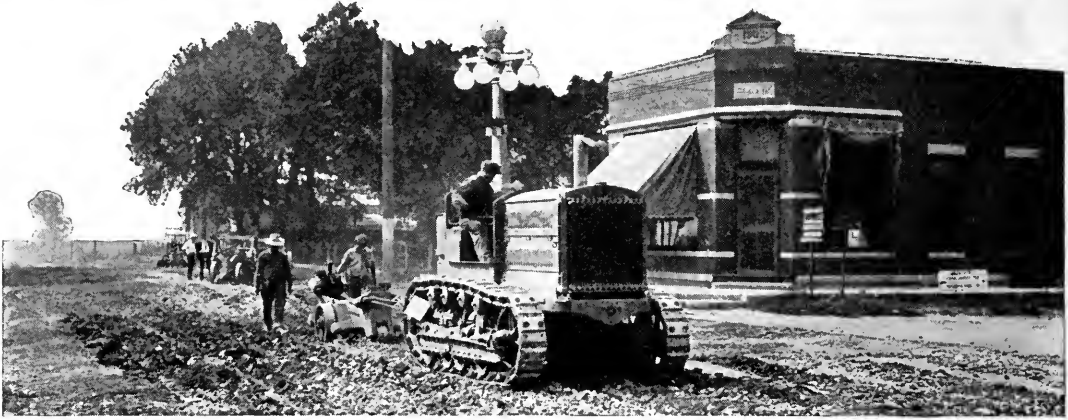
Can you picture the hundreds of people trampled under foot, the ambulances taking away the dead and maimed, the firemen and policemen at work, the hospitals filled? In God's name, can't something be done in this one class of building without such a horrible lesson as has had to precede the correction of many other classes?

Civic and Personal Responsibility for Fire Losses

Among the resolutions adopted by the Chamber of Commerce of the United States at its annual convention in New York in May, was the following on Fire Prevention:

The national loss through the waste of fire mounts upward at a rate which indicates the need of immediate attention in each state and in every city. Within a few years the amount in property values

destroyed in the United States by fire has increased until it is annually in excess of the entire cost of the Panama Canal. In large part this figure represents waste which can be prevented by effective action by states and cities. Personal liability for damages accruing to others through fire caused by gross negligence should be enforced in ways which will bring home to individuals their proper responsibility.



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has never failed to respond. We are entirely satisfied with the service it is giving us.” We can refer you to scores of other municipalities and road contractors throughout the Country who are profiting by the reliable, low-cost operation of “Caterpillars.” Let us show you what “Caterpillars” will do on your grading or maintenance work.

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The Municipal Bond Situation

By Sanders Shanks, Jr.

Editor, *The Bond Buyer*

MUNICIPAL financing, and, in fact, all other financing, was overshadowed during the last month or more by the Government's money-market activities in connection with the refunding of the Victory Notes which matured on May 21. Prior to the actual announcement by the Secretary of the Treasury of the offering of \$400,000,000 or more four-year $4\frac{3}{4}$ per cent notes, the uncertainty as to just what form the Treasury operations would take and whether or not the huge funding operations would prove successful threw a cloud over the bond markets generally and especially dampened the interest of municipal bond buyers.

The Government loan, we now know, never was in doubt for a moment. Total subscriptions entered exceeded a billion dollars. Mr. Mellon has again achieved a brilliant success in the money markets.

Nevertheless, the Government offering of a $4\frac{3}{4}$ per cent interest rate for four-year money indicates clearly that a considerable readjustment has occurred in the market for securities and it means that state and city bonds are only just getting down to a price level where they can expect to compete successfully with other classes of loans, such as Government notes, railroad bonds and corporation securities.

During the next four or five weeks, the market for tax-exempt state and city issues will be thoroughly tested out through the offering of a long list of important loans aggregating well over \$100,000,000. A month hence it will be interesting to study the results of all this new pending borrowing.

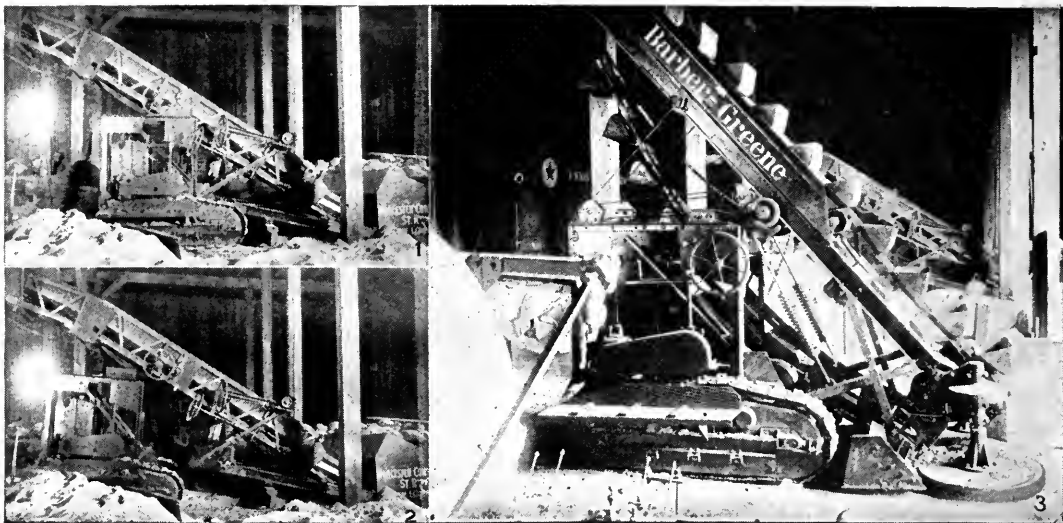
Public borrowing in May, omitting, of course, that of the Federal Government, did not greatly exceed in volume that of April and was far below that of May of last year. There appears to be no question but that the municipalities of the entire

country are at last beginning to call a halt on capital expenditures. The taxpayer is beginning to feel the burden and is putting the brakes on. This year the largest loans will be negotiated, not by our big metropolitan cities like New York, Chicago, Detroit, Boston and Los Angeles, but by state governmental bodies whose two principal activities these days are building good roads and paying soldiers' bonuses.

The state of Iowa, which was unable to sell \$22,000,000 Soldiers' Bonus $4\frac{1}{4}$'s when offered in April, is now advertising for bids on June 2 with the interest rate at not to exceed 5 per cent. The state of Kansas has announced its intention to offer on June 14 \$25,000,000 $4\frac{1}{2}$ per cent Soldiers' Bonus bonds. In view of market conditions, it may be necessary for this state to increase the interest rate on this issue. In addition to these issues, the state of Illinois is offering \$10,000,000 $4\frac{1}{2}$ per cent bonds for the payment of a bonus to World War veterans, and \$7,000,000 Highway $4\frac{1}{2}$'s. Alabama is offering \$3,900,000 Highway $4\frac{1}{2}$'s; California \$5,000,000 $4\frac{1}{4}$'s for the same purpose; North Dakota, \$3,700,000 Real Estate and Mill and Elevator 5's; and the state of Colorado, \$1,500,000 5 per cent Highway bonds. Minnesota is completing arrangements to offer for sale the first block of \$40,000,000 Rural Credit bonds, recently authorized:

IMPORTANT STATE AND MUNICIPAL ISSUES SOLD DURING MAY

| Amount | Place | Maturity | Rate (%) | Net Yield (%) |
|------------|----------------------|----------|----------------|---------------|
| \$ 880,000 | Massachusetts | 1924-63 | 4 | 3.87 |
| 3,000,000 | Pittsburgh, Pa. | | | |
| | School District | 1924-53 | 4.10 | 4.02 |
| 449,000 | Union Co., N. J. | 1925-73 | $4\frac{1}{4}$ | 4.23 |
| 2,500,000 | Kansas City, Mo. | 1942 | $4\frac{1}{2}$ | 4.33 |
| 725,000 | Grand Rapids, Mich. | 1924-43 | $4\frac{1}{2}$ | 4.42 |
| 1,970,000 | Cleveland, Ohio | 1924-47 | $4\frac{1}{2}$ | 4.46 |
| 600,000 | Cincinnati, Ohio | | | |
| | School District | 1924-47 | $4\frac{1}{2}$ | 4.48 |
| 4,500,000 | Los Angeles, Calif. | 1924-63 | $4\frac{1}{2}$ | 4.49 |
| 4,000,000 | Atlanta, Ga. | 1925-51 | 5 | 4.54 |
| 965,000 | Dodge Co., Wis. | 1924-42 | 5 | 4.72 |
| 1,500,000 | St. Louis Co., Minn. | 1931 | 5 | 4.77 |
| 1,900,000 | Oklahoma City, Okla. | 1934-47 | 5 | 4.82 |



Photograph No. 1 shows the Barber-Greene Municipal Loader with snow-loading boom; No. 2 shows removal of snow boom; No. 3 shows the bucket-loading boom in place.

Snow Loaders that Work in Summer

BARBER - GREENE Snow Loaders which in winter save 60 shovelers, can be converted into standard Barber-Greene Bucket Loaders for use in road-building and other forms of construction or for coal and ash handling.

The conversion is effected by replacing the snow-loading boom with a standard Barber-Greene bucket-loading boom.

The Barber-Greene Bucket Loader is used in many cities to enable one man to do the work of an entire gang in loading stone and sand for paving work.

Their automatic disc-feeders are so effective that ordinarily not a single shoveler is required—not even for cleaning up.

In paving Hillside Avenue, Hillside, New Jersey, one Barber-Greene replaced 12 shovelers in handling stone.

In Bartlesville, Okla., a Barber-Greene was used to load stone into horse carts on city paving work and did away with all stone shoveling at the storage piles.

In Fremont, Ohio, last year $3\frac{1}{2}$ miles of road $16' \times 6"$ with $4' \times 6"$ curbs were built in 24 days. All the stone used was loaded into wheelbarrows with a Barber-Greene Bucket Loader having a wheelbarrow hopper.

Because of the impending scarcity and high cost of shovel labor, more and more municipalities, townships and counties are adding Barber-Greenes to their road building equipment. Model 42 is especially popular because it has a removable boom so that it can be converted into a snow loader in winter.

For additional particulars send for free book "Results on Road Jobs," 1923 edition.

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The City's Legal Rights and Duties

Information for City Attorneys and Other Municipal Officers, Summarizing
Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Three Decisions of Interest to Fire Departments

Municipality's Immunity from Contributory Negligence Does Not Bar Its Claim for Damages

A novel contention concerning the right of a municipal corporation to recover damages for injury to its property was overruled by the Georgia Court of Appeals in the case of *City of Columbus vs. Columbus Railroad Company*, 113 *Southeastern Reporter*, 243. In that case the city sued defendant, claiming that one of the latter's street cars was intentionally run into a fire truck belonging to the city. The railway company defended on the ground that since the city, through being engaged in a governmental activity in maintaining the fire department, should not be subject to any imputation of contributory negligence in the operation of the truck, the railway company could not be held liable. Disposing of this contention, the Court said:

"It is no defense to a tort action that the plaintiff is incapable of committing negligence. Otherwise, a child of such tender years as to be conclusively presumed incapable of negligence would be unable to recover for damage inflicted upon the child by the willful act or negligence of another. If the defendant in a tort action by a child incapable of committing negligence is at a disadvantage, and cannot defend against his own tortious act upon the ground that the child was guilty of contributory negligence, certainly the defendant in a tort action by a municipality will not be relieved from liability for his own tortious acts against the municipality because of the incapability of the municipality to commit contributory negligence. However plausible the defendant's contention may seem, and even if the defendant could defend against its own negligent conduct upon the ground of the incapability of the plaintiff to commit negligence, the defendant certainly cannot on such ground defend against its own intentional and willful tort."

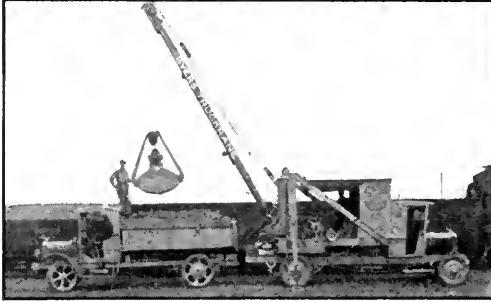
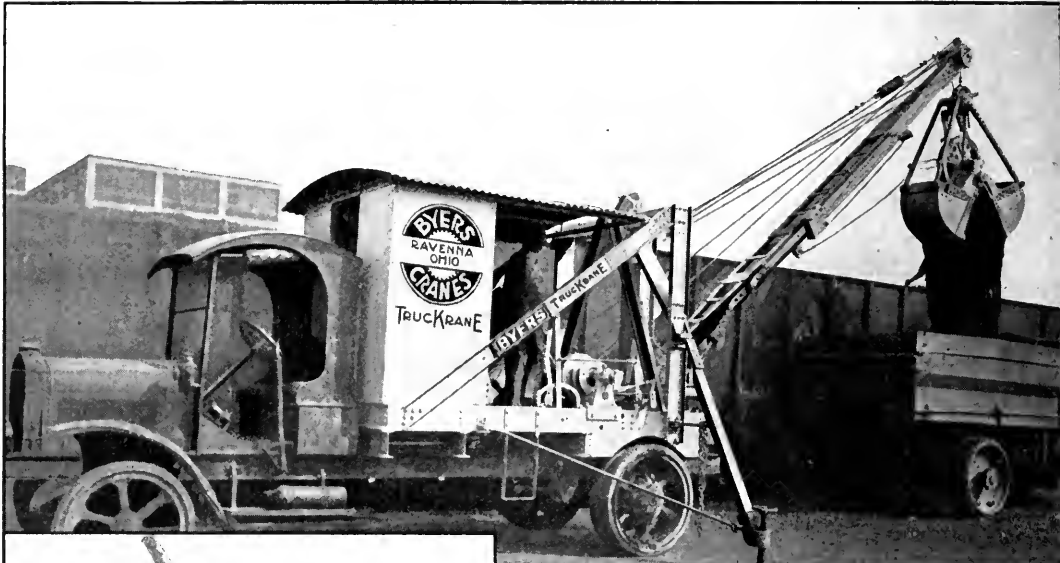
A Court Holds That Commission Plan Cities Are Liable for Negligently Operated Fire-Fighting Equipment

Numerous court decisions have established the rule of law in several of the states that a city's maintenance of a fire department constitutes a governmental function in such sense that the city is not to be held liable for injuries and losses sustained by private individuals through negligent driving of fire trucks, etc., along the streets.

In a recent decision the Florida Supreme Court argues for a qualification of this rule at least as to cities operating under the commission form of government, or the city manager plan. In this case—*Kaufman vs. City of Tallahassee*, 94 *Southern Reporter*, 697—the court reversed the judgment of a lower court in which it had been ruled that defendant city was not liable for injury to a pedestrian who was struck by a fire-truck trailer. The higher court said:

"The establishment and maintenance of a fire department may be regarded as a governmental function; that point is not necessary to a decision in this case, but whether the operation of its vehicles and trucks in crowded streets, where, due either to carelessness in the handling of the same or the clumsy character of the vehicle itself, it is a menace to the safety of pedestrians, is a wrong or the violation of a duty which the city owes to the people, is another question.

"The distinction between what is a governmental and what a ministerial function of a city is not always so clear that a given transaction may at once be classed as the one or the other; but, whether governmental or not, it is always quite difficult, if not impossible, to give a satisfactory reason for holding a city immune from liability when through its own negligence or the carelessness or inefficiency of its agents and employees it violates a right of a citizen to his injury, especially when one



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considers that provision of the Bill of Rights which declares that: 'All courts in this state shall be open, so that every person for any injury done him in his lands, goods, person or reputation shall have remedy, by due course of law, and right and justice shall be administered without sale, denial or delay.' (Constitution, Bill of Rights, Sec. 4.)

"The growth of municipal governments to the degree of perfection claimed by those who favor the commission plan is upon the theory that a city's functions have become more and more ministerial, in that its duties consist largely, if not entirely, in the management of public utilities such as water-works and sewerage systems, electric lighting and power-plants, gas plants, telephones, and street railways, all properties, not of the state, but of the people of the community or city, which are managed for the financial advantage and profit of the city. Courts upholding the constitutionality of such plans of municipal government do so upon the ground that the constitutional division of the powers of government into three departments, and forbidding persons belonging to or performing the functions of one department from exercising any powers appertaining to either of the others, does not apply to municipal corporations. See 1 Clute, *Modern Municipal Charters*, 224.

"It requires very little stretching of this doctrine to say: Therefore no municipal function is governmental, a city is not a political subdivision of the state, not a government but purely a business, commercial, proprietary management of local public interests.

"If there was any doubt as to the city's liability for the injury, as set out in the declaration on the ground set up in the demurrer, it should be resolved against the city, in view of the modern thought as expressed in the commission plan that a city is merely a large quasi-public corporation whose activities partake more of the nature of a business than a government."

Compulsory Installation of Automatic Sprinklers Upheld As a Valid Fire Prevention Measure

The Massachusetts statute requiring automatic sprinklers to be installed in certain classes of buildings in the metropolitan fire prevention district was sustained as being a valid measure, in the case of *Commonwealth vs. Badger*, 137 *Northeastern Reporter*, 261. In its decision the Court said:

"The statute is not open to objection on constitutional grounds. It plainly is a regulation designed to protect persons working upon inflammable material in rooms higher than the second story from the peril of fire. It requires the installation of a safety device in buildings where rooms in the third or higher stories are used for the manufacture of wooden, rattan or cane goods or other substances or stuffs likely to become easily ignited, fire in which would be peculiarly difficult to extinguish when once started, and in which flames might be expected to spread with dangerous rapidity. It is obviously enacted in the interest of public health and public safety. The statute relates only to the use of an existing building for specified dangerous occupations. It prohibits such use after reasonable notice unless the safety appliances are installed. Ample time after service of the notice is allowed for change of the occupancy to a less hazardous business if that is preferred to installing the equipment required. It establishes no arbitrary or inflexible rule for the alteration of existing structures, lawful in every particular when erected. . . . It is confined in its operation to providing safety appliances for buildings above a certain height used for occupations regarded by the General Court as subjecting those engaged therein to peculiar risk from fire."

Trees Hold the Flood

(From the *Milwaukee Journal*, April 1, 1923)

LANDS west of Wauwatosa are flooded. A concrete bridge and its abutments have been swept away by the waters. But rows of elm trees stand, unshaken by the swollen stream.

Trees are flood controls. They protect banks and watersides when the works of man are swept away. In forests, they completely check floods. They hold the snows, letting them melt slowly. They retain water. They prevent deluges.

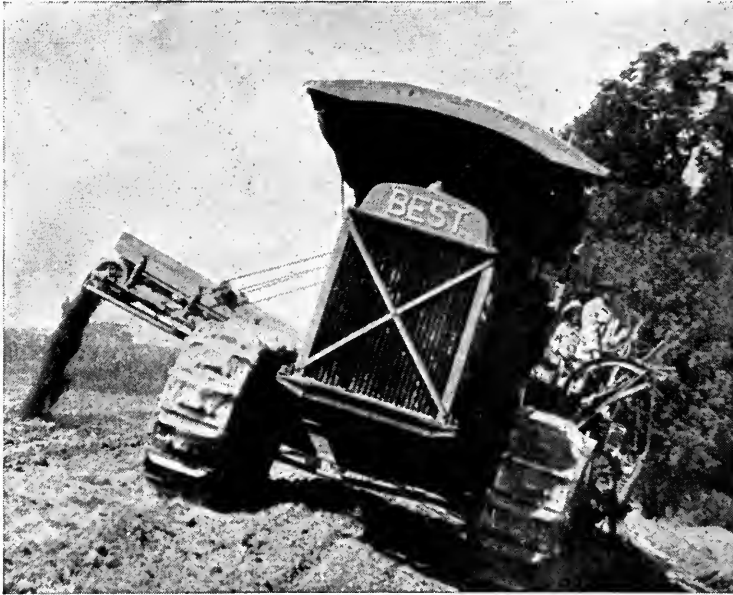
A few trees, scattered along a stream bank, can't do much to stop floods. They can, however, protect that bit of land on which they stand. And they can be added to, and thereby soon become bulwarks against which floods will rage in vain.

If Milwaukee, and the county, might have forest parks along all of their watercourses, much of the annual flood menace would vanish.

Such a thought is in the minds of the Planning Commission. And the county park—proposed to follow the watercourses—would be largely a park of trees.

Trees and shrubs have performed another service in Milwaukee. Where they have covered the steep banks of Lake Michigan, they have retained those banks. Where they have been cut away, the banks have crumbled. If the lake shore might be heavily covered with tree and shrub growth, there would be little further damage by the water. Willows on the beaches, with other water-growing species in tree and shrub, are a necessary part of such a planting.

Milwaukeeans ought to plant 10,000 trees this spring—in addition to those that will be planted by the City Forester. Many of them ought to be set out on the watercourses and the lake shore.



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Zoning Notes

Prepared by Frank B. Williams (Author of "The Law of City Planning and Zoning") from Data Collected by the Zoning Committee of New York, 233 Broadway, New York City.

RECENT decisions in this country confirm the growing conviction of city planners that our courts have accepted the principle of zoning and will in future question only the application of that principle to particular conditions. Where there is a good state enabling act, a municipal regulation drawn under it, for the promotion of the public health, safety and welfare under the local conditions existing in that municipality, and a board of appeals, authorized by the law and the ordinance, for the elimination of those occasional cases of injustice which no law and ordinance can in every instance foresee and provide for, these decisions have sustained zoning. It is where these requisites are lacking that the decisions are adverse. In this connection, those of our readers who have not learned of it may be glad to know that the Department of Commerce at Washington, D. C., has prepared and issued a form of state enabling act which is rightly called a model act.

In New York City there are excellent charter provisions with regard to zoning, including a board of appeals. The New York City regulation, our readers will remember, was declared to be constitutional in the leading case of *Lincoln Trust Co. v. Williams Building Co.*, 229 N. Y. 313. The later cases in New York State continue, expressly or impliedly, to uphold that regulation. Recently the height limitation on Fifth Avenue opposite Central Park was changed from 150 to 75 feet. An ambiguity in the description of the district as altered cast doubt on the validity of the change. In *Palmer v. Mann* (120 Misc. 396) the Court held that the change was legally made, sustaining the new restriction and the regulation of which it is a part.

The highest court in the state of New York has rendered its decision in the *Astor case* (*People ex rel. Sheldon v. Board of Appeals* 234 N. Y. 484). The Board of Appeals of New York City decided that Mr. Astor could extend the rear of his business building into a residential district, and the Court of Appeals sustained the decision. It seems clear that if there had been no board of appeals existing under the authority of the statute and the regulation, mandamus would have been

brought and the zoning regulation as to the building in question would have been declared unreasonable and void.

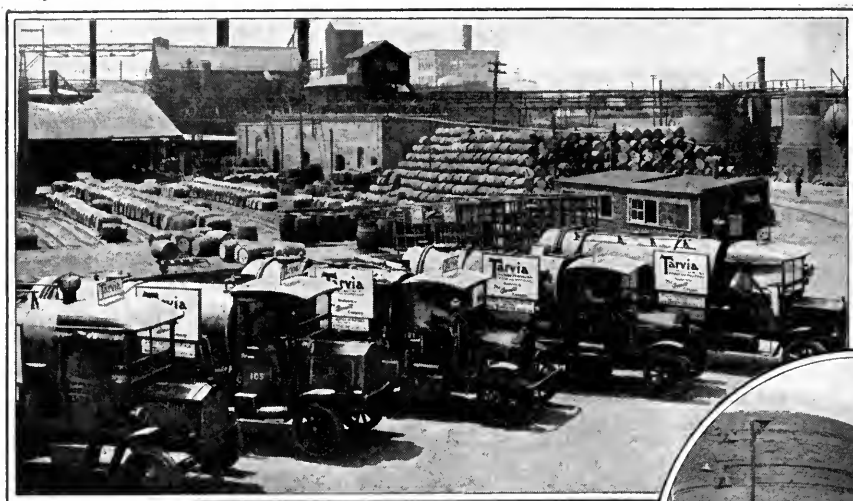
This was what occurred in the case of *Wille-rup v. Village of Hempstead* (120 Misc. 485). In New York the state law authorizing zoning in villages does not provide for a board of appeals. A landowner in the village of Hempstead claimed that the ordinance forbidding him to build a garage in a residential district was under the circumstances unreasonable. The court sustained his contention, declaring that in his case the ordinance was confiscatory and void, and pointed out that it was the lack of a board of appeals that made such a regrettable decision necessary.

In New Jersey the Supreme Court in *Kosloy v. Quigley* (November, 1922) held that, contrary to decisions in other states, a store could not be excluded from a residential district. The facts in that case were exceptional. The question is squarely raised in the pending *Nutley case* (*State ex rel. Ignaciunas v. Risley*, Supreme Court, 1923). The New Jersey law does not provide for a board of appeals, and the many adverse decisions against zoning ordinances, all of which have held or assumed zoning to be valid in principle, seem to have made the courts hostile to zoning. An adverse decision in the *Nutley case* would render zoning under existing laws practically impossible in New Jersey, and make new legislation necessary; or possibly even a constitutional amendment, which would be unfortunate. Such amendments, of necessity covering only foreseen contingencies, necessarily hamper the law in its growth, whereas by sympathetic judicial decision the law develops freely.

In the case of *City of St. Louis v. Evraiff and Friedman*, the Missouri courts have granted the city a rehearing. It will be remembered that the St. Louis ordinance was passed under the home rule powers of the city, thought to be adequate; there being no state enabling act for cities over 500,000. The original decision, although adverse in only one particular, contained dicta against zoning in general.

In many states zoning has been discredited by decisions against ordinances which cannot properly be called zoning at all. A late illustration of this is the widely cited *Forest Park, Ill.*, case (*People ex rel. Roos vs. Kaul*, 302 Ill. 317). The ordinance forbade the erection of any industrial building within 1,000 feet of any church. It would indeed be strange if no suitable site for a factory could be found in all

* EDITORIAL NOTE.—In this article Mr. Williams reviews the developments in zoning since the appearance of his recent book, in which it is so fully discussed. In subsequent articles appearing under this heading month by month he will discuss the subsequent developments as they arise, thus enabling readers of *THE AMERICAN CITY* who have possessed themselves of the book, to keep constantly informed on this important subject in all its phases.



*A fleet of
Tarvia Motor
Trucks at the
Chicago Plant*

“What Do You Mean by Tarvia Service?”

HUNDREDS of men interested in the building and maintenance of good roads have asked us this question. Here is the answer:

First of all, Tarvia Service means that we put at your disposal the skill of highly trained road engineers—men with years of experience in all types of road construction. Without obligation, these men will assist you in solving your road problems—construction, maintenance or repair.

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own fleet of tank cars, in barrels or by motor trucks.

Where it is delivered by motor trucks, we follow a truck-dispatching schedule as punctual and dependable as that of the great trans-continental trains. These trucks are manned by trained experienced crews who lend their skilled co-operation in the application of the Tarvia.

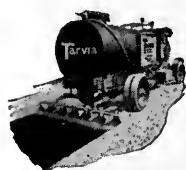
In brief, Tarvia Service is a real aid to the road officials of any state, city, town or community where prompt, efficient road construction is the need. A line to our nearest branch office will start the wheels moving.

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Forest Park within a thousand feet of some church. The court, properly, held the ordinance to be unreasonable and void. Different in detail, but the same in principle, is the New Jersey case of *Levy v. Mravlag* (115 Atl. 350).

The most important recent case is *Ware v. City of Wichita* (also *City of Wichita v. Ware*, March 10, 1923) in the Supreme Court of Kansas. Kansas has an enabling act based upon the model act of the Department of Commerce, including the provisions for the board of appeals. Before the ordinance was adopted, a landowner had applied for a permit for a store in a residential neighborhood. Neverthe-

less, the court sustained an injunction against the erection of the store contrary to the terms of the later ordinance. In spite of the very real hardship, there is no doubt of the right to forbid such an erection, in a proper instance, under the police power. The case was most carefully considered, and the decision, strongly sustaining zoning, is an able one.†

† These cases, and other recent decisions, are discussed at length in an address delivered by Edward M. Bassett at the 1923 National Conference on City Planning, in Baltimore, entitled "Present Attitude of Courts Toward Zoning." A reprint of the address may be obtained from the Secretary of the Conference, Flavel Shurtleff, 130 East 22nd Street, New York City.

National Conference Urges State Legislation for Regional Planning

THE following resolution was adopted at the Baltimore meeting of the National Conference on City Planning last month: "Resolved, that the National Conference on City Planning recommends the passage of legislation by the respective state legislatures to

enable the public authorities of counties or other governmental units in the county to secure and to cooperate in securing county-wide planning and to join with contiguous counties or governmental subdivisions thereof in securing intercounty or regional plans."

On the Calendar of Conventions

JUNE 11-15.—BUFFALO, N. Y.

International Association of Chiefs of Police. Annual convention. Secretary, George Black, Chief of Police, Wilmington, Del.

JUNE 12-14.—BUFFALO, N. Y.

Conference of Mayors and Other City Officials of the State of New York. Annual convention. Secretary, William P. Capes, 25 Washington Avenue, Albany, N. Y.

JUNE 13-16.—MINNEAPOLIS, MINN.

Governmental Research Conference of the United States and Canada. Annual meeting. Secretary, Charles B. Ryan, Municipal Research Bureau, 612 Electric Building, Cleveland, Ohio.

JUNE 18-21.—MINNEAPOLIS, MINN.

Smoke Prevention Association. Annual meeting. Secretary, Frank A. Chambers, Room 704, City Hall, Chicago, Ill.

JUNE 18-21.—WICHITA FALLS, TEX.

Southwest Water Works Association. Annual convention. Secretary, R. D. Morgan, Mexia, Tex.

JUNE 19-21.—MILWAUKEE, WIS.

National Association of Comptrollers and Accounting Officers. Annual convention. Secretary, Mark M. Foote, Comptroller's Office, Chicago, Ill.

JUNE 20-21.—FARIBAULT, MINN.

League of Minnesota Municipalities. Annual convention. Executive Secretary, Morris B. Lambie, The Municipal Reference Bureau, University of Minnesota, Minneapolis, Minn.

JUNE 20-22.—BRIDGEPORT, CONN.

New England Association of Fire Chiefs. Annual convention. Secretary, Chief John W. O'Hearn, Watertown, Mass.

JUNE 20-22.—YORKTON, SASK.

Union of Saskatchewan Municipalities. Annual convention. Secretary, W. E. Hodge, Moose Jaw, Sask.

JUNE 24-26.—STEVENS POINT, WIS.

League of Wisconsin Municipalities. Annual convention. Secretary, Ford H. MacGregor, Madison, Wis.

JULY 19-21.—HEBER CITY, UTAH

State Municipal League of Utah. Annual convention. Secretary, Robert N. Young, City Treasurer, Salt Lake City, Utah.

JULY 31-AUGUST 2.—KINGSTON, ONT.

Dominion Association of Fire Chiefs. Annual convention. Secretary, Chief James Armstrong, Fire Department, Kingston, Ont.

AUGUST 7-10.—WALLACE, IDAHO

Pacific Coast Association of Fire Chiefs. Annual convention. Secretary, Jay W. Stevens, 205 Merchants Exchange Building, San Francisco, Calif.

AUGUST 14-16.—OTTUMA, IOWA.

League of Iowa Municipalities. Annual convention. Secretary, Frank G. Pierce, Marshalltown, Iowa.

AUGUST 20-23.—HARRISBURG, PA.

Association of American Cemetery Superintendents. Annual convention. Secretary, W. B. Jones, Highwood Cemetery, Pittsburgh, Pa.

AUGUST 30-SEPT. 1.—SHAWINIGAN FALLS, QUE.

Union of Canadian Municipalities. Annual convention. Secretary-Treasurer, A. D. Shibley, 10 St. John Street, Montreal, Que.

SEPTEMBER 10-14.—CORONADO, CALIF.

League of California Municipalities. Annual convention. Executive Secretary, William J. Locke, Pacific Building, San Francisco, Calif.

SEPTEMBER 10-15.—KANSAS CITY, MO.

American Institute of Park Executives. Annual convention. Secretary-Treasurer, Will O. Doolittle, Minot, N. Dak.

SEPTEMBER 18-21.—BURLINGTON, VT.

New England Water Works Association. Annual convention. Secretary, Frank J. Gifford, 715 Tremont Temple, Boston, Mass.

SEPTEMBER 25-28.—READING, PA.

International Association of Municipal Electricians. Annual convention. Secretary, Clarence R. George, City Electrician, Houston, Tex.

OCTOBER 8-11.—BOSTON, MASS.

American Public Health Association. Annual meeting. Secretary, A. W. Hedrick, 370 Seventh Avenue, New York, N. Y.

OCTOBER 23-26.—RICHMOND, VA.

International Association of Fire Engineers. Annual convention. Secretary, James J. Mulcahey, City Hall, Yonkers, N. Y.

OCTOBER 29-31.—CINCINNATI, OHIO

National Association of Commercial Organization Secretaries. Secretary-Treasurer, Joseph F. Leopold, 301 Crocker Building, Des Moines, Iowa.

NOVEMBER 12-16.—MEMPHIS, TENN.

American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box 234, St. Petersburg, Fla.

NOVEMBER 13-15.—WASHINGTON, D. C.

City Managers' Association. Annual convention. Secretary, John G. Stutz, Lawrence, Kans.



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Modern sanitary appliances are absolutely necessary for public health protection. Every community needs them.

Mueller Sanitary Drinking Fountains

are designed to serve the public and to give complete health protection. They are built to last a lifetime, with practically no attention after being installed.

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Hints, Helps and Happenings

Relation of Civic and Economic Factors to Infant Mortality

IN a survey of conditions surrounding infant life, made by the Children's Bureau of the U. S. Department of Labor, infant mortality in Gary, Ind., was found to have a close relation with such economic and civic factors as low income, poor housing and sanitation, and lack of public welfare activity.

While the development of housing by a subsidiary land company of the Steel Corporation has "resulted for the most part in well-built and attractive residence areas," the company early adopted the policy of renting its houses only to Americanized workmen, "leaving the foreign-born laborer to house himself and his family as best he could." The result has been to concentrate the foreign-born population in certain sections of the city having poorer housing, less development and extension of sewers and water-mains and other measures of municipal sanitation, and consequently a much higher infant death-rate than the sections developed by the land company. The rate in the former districts was 141.2 per 1,000 births; in the latter, 90.6.

An increase of infant mortality with a fall in the earnings of the fathers or chief bread-winners was again demonstrated, as in preceding studies of the Children's Bureau in other cities. For the year of the Gary study, when the chief bread-winners' earnings amounted to at least \$1,850, the infant death-rate was 89.4; when the earnings were between \$1,050 and \$1,850, the rate increased to 127.1; and when the earnings fell below \$1,050, the rate rose to 137.8.

Since the findings of the study are published with a view to showing the consequences which may be expected from similar conditions in any

community where they exist, the report makes no statement as to conditions in Gary during the present year. It declares, however, that "by carrying forward and extending work already commenced in Gary, through infant-welfare stations, prenatal clinics, and public-health nurses, it should be possible within a few years to reduce the infant mortality rate to a very low figure."

Low Records Established for Infant Death-Rates

ACCORDING to Dr. Otto R. Eichel, Director of the Division of Vital Statistics of the New York State Department of Health, the best records among up-state New York cities in respect to infant mortality in 1922 are those of Canandaigua, New Rochelle, Ossining, White Plains and Glens Falls. In Canandaigua the infant mortality per 1,000 children born alive was only 38. New Rochelle is second, with a rate of 48, Ossining 52, White Plains 53, and Glens Falls 54.

In the last five years New Rochelle has exactly halved its infant mortality rate, which dropped from 96 in 1918, to 79 in 1919, 65 in 1920, 61 in 1921, and 48 in 1922.

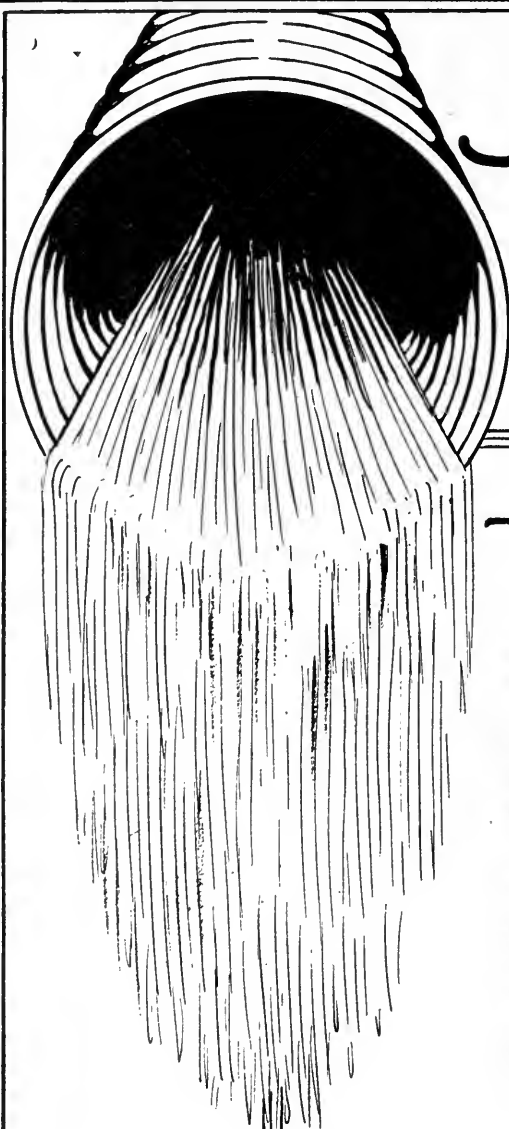
The reduction of the infant death-rate in New Rochelle and other cities is indica-

tive of what can be done by an alert community in the way of purchasing public health. New Rochelle has an up-to-date, efficient health department with a full-time health officer aided by active voluntary organizations which carry excellent educational work through child welfare stations and in other ways. The same is true of a number of other New York State cities where the results in saving babies' lives have been very striking, and where the community's greatest asset is thus being conserved,



FOURTH OF JULY POSTER FOR 1923

Single copies of this poster (12x16 inches in size) may be secured, without charge, from the National Fire Protection Association, 40 Central Street, Boston, Mass. In quantities the charge is 50 cents for twenty-five copies, 90 cents for fifty copies, or \$1.75 per hundred



Newport

RUST-RESISTING

Culverts

— A LONG LIFE AND A
USEFUL ONE —

To stand up under the attacks of acid soils and other corrosive agents, culverts must be made of the most economical rust-resistant metal. Newport Culverts are made of **GENUINE OPEN-HEARTH IRON**, guaranteed to be 99.875 per cent pure iron copper alloy, the best rust-resistant metal on the market today for culvert service.

Our free booklet on Newport Culverts records complete chemical tests of the materials in these half-round and full-circle types of corrugated culverts. It also contains illustrated descriptions of actual installations that show accurately and forcefully the meaning of

NEWPORT CULVERT SERVICE

Newport Culvert Co.
542 West Tenth Street
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London Inaugurates a "Walk on the Left" Campaign

WHAT'S the use? While our traffic officers in American cities are doing their best to educate pedestrians and drivers to keep to the right, here comes London with a "Walk on the Left" campaign. To quote from our British contemporary, *Municipal Engineering and the Sanitary Record*:

"We observe that careless pedestrians are to be more carefully shepherded in the London streets, not simply by means of the 'Walk on the Left' campaign inaugurated by the London 'Safety First' Council, but also by the proposed adoption of recognized crossing places in the street (marked 'Safety Zone,' with constables stationed there on point duty), signs on lamp standards, and perhaps the removal of certain street refuges or conveniences which create danger by obstructing traffic. In view of the great percentage of street accidents attributed to inadequate lighting in a number of American cities, it is proposed to collect similar data respecting cities in Great Britain, with a view to reform. Considering that the Council's income is only a little over £1,000, the results so far are noteworthy, for in three years the number of Metropolitan street accidents decreased by nearly 50 per cent, 70,000 posters have carried their message to the public, the competition for drivers has attracted plenty of entrants, and the railway companies have taken up the idea."

Americanization and Community Organization

THESE two paragraphs are from the recently published Ninth Annual Report of the Commission of Immigration and Housing of California:

"The Commission found that Americanization was not flag-raising and 'patriotic' howling; that it was not suppression of speech and honest opinion; that it was more than teaching English to foreigners. Americanization, it found, is the encouragement to decent living and making possible the attainment of decent standards. It involves the development of national ideals and standards, and the schooling of all residents, foreign-born as well as native-born, in those ideals and standards.

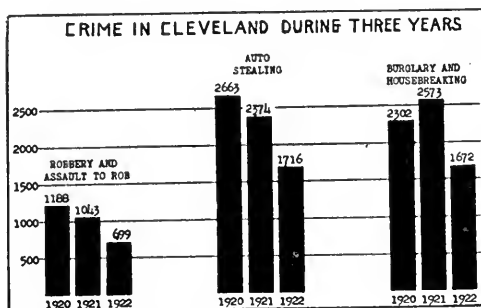
"The best medium for this development of national ideals and standards is, of course, the community. It is in his life as a member of the community that every man, native-born or foreign-born, becomes truly Americanized and

makes his best contribution to his nation. Therefore, the Commission is definitely interested in the development of all rational schemes of community organization."

Massachusetts Appoints a State Consultant on Housing and Planning

MASSACHUSETTS has taken a forward step in town planning. One of the three states in the Union with a state department which has power to advise and assist local planning boards, it has been handicapped by the fact that it had not a field worker. Authority has now been granted by the Legislature to the Department of Public Welfare to appoint a Visitor to Planning Boards. To this position as a state consultant on housing and town planning, the Department has appointed Edward T. Hartman, who is a well-known authority in this field. Mr. Hartman has begun his duties, which will include helping the local planning boards in their problems, encouraging the formation of new boards, and general educational and publicity work. An opportunity has been given Mr. Hartman to broadcast three talks on town planning from the Medford Hillside Radio Station as a beginning of the campaign.

The appointment of a Visitor to Planning Boards is especially timely because of the regional planning work about to be undertaken by the new Metropolitan Planning Division, created by the 1923 session of the Massachusetts Legislature.



CLEVELAND'S RECORD IN REDUCING CRIME

How the Cleveland Crime Survey helped in making this reduction possible is outlined in the recently published report of the Cleveland Foundation listed on page 635 of this issue

American Cities Invited to Participate in International Cities and Town Planning Exhibition at Gothenburg

THIS year the city of Gothenburg, Sweden, is celebrating the three hundredth anniversary of its foundation with a great Jubilee Exposition, an important feature of which will be an International Cities and Town Planning Exhibition, to be held July 27 to August 12. From Albert Lilienberg, Chief of the Town Planning Department of Gothenburg, THE AMERICAN CITY MAGAZINE has received a supply of labels and exhibitor's blanks which may be used by municipal officials, civic organizations or city planners desirous of contributing drawings, photographs or other material. Exhibits delivered to Director G. Hilmer Lundbeck, of the Swedish American Line, 24 State Street, New York, marked for shipment on the Steamship "Kungsholm," sailing June 19, will be forwarded to Gothenburg without expense for shipment or display.

THE AMERICAN CITY

"If this system were to replace the old plan of heating, our fires would be reduced at least 25%."



These buildings in Cedar Rapids, Iowa, receive their heat through underground mains from a Central Heating Plant.



CITY OF PORTLAND, OREGON
DEPARTMENT OF PUBLIC AFFAIRS
C. A. ROGERS, CHIEF CLERK
OFFICE OF FIRE MARSHAL

March 2, 1922

SAFETY FIRST

EDWARD GREENFELL
FIRE MARSHAL

Mr. L. T. Herwin,
General Manager,
Northwestern Electric Company,
Portland, Oregon.

Dear Sir:

I have been informed that there is a move on foot to stimulate the installation of Central Heating Systems throughout the City. This should meet with the hearty approval of all who are interested in preventing destruction of life and property by fire, as this system eliminates practically all fire hazards which surround the old style heating systems.

The fire department is being continually called to extinguish roof fires, chimney fires, defect-ive flue fires, fires caused from overheating stovepipes, furnaces, etc., fires caused by careless firing of boilers, containers, etc., oil burner fires and many others, all of which are eliminated by the Central Heating System. It is estimated that if this system were to replace the old plan of heating, our fires would be reduced at least twenty-five per cent.

Therefore, I heartily approve your campaign and hope to see the Central Heating plan extended throughout the city in the near future.

Respectfully yours,
Edw. Greenfell
FIRE MARSHAL

Many Communities, Institutions, or Industrial Plants can practically eliminate fire hazards with Adsko Community Heating.

Steam distributed through underground mains, the same as gas and water, furnishes adequate heat, with no individual heating fires in buildings. The steam may be from a power station or industrial plant, or from a Central Heating Station.

This method of heating buildings is not only a saving to the community in the reduction of fire hazard, coal and ash handling, but has proved extremely profitable as a commercial enterprise. In many cases the sale of exhaust steam for heating buildings more than pays all cost of electric power generation.

A bulletin has been prepared giving data, cost of operation and profits of certain installations. Write for a copy.

AMERICAN DISTRICT STEAM COMPANY

GENERAL OFFICES AND WORKS

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American District Steam Co., N. Tonawanda, N. Y.
☐ Send Bulletin No. 20-AC, building groups from Central Station.
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Summer Course of Training in Community Chest Management

THE spread of the community chest method of financing philanthropic agencies has created a problem in connection with their management. A number of American cities are now seeking trained men to direct their community chests or welfare federations. To meet this need, the association of community chests known as the American Association for Community Organization has arranged a special eight-weeks course of training in community chest management to be given at Ohio State University, Columbus, commencing on July 9, 1923.

The number of students will be limited to twenty, and they must show evidence of sufficient executive ability and knowledge of civic or social work to enable them to profit by the highly specialized course of instruction which will be given. The instructors will be Allen T. Burns, of the National Information Bureau; Rowland Haynes and Raymond Clapp, of the Cleveland Welfare Federation, Elwood Street, of the St. Louis Community Fund, and William J. Norton, of the Detroit Community Union. The subjects covered in lectures and examinations will include social finance and the conduct of the joint annual campaign; the collective planning of community welfare work; joint budgeting and financial control; internal administration of a community chest; and methods of education and publicity.

The cost of the course will be nominal, and the authorities of Ohio State University believe that \$100 ought to cover the cost of living during the eight weeks of the course.

Those wishing to enroll for the course, or desiring more information about it, should communicate at once with the National Information Bureau, Inc., 1 Madison Avenue, New York.

Municipal Movies in Norway

THE city of Bergen owns and operates seven motion picture theaters, six of which are open every day from 5 to 11 p. m., and one only on Saturday and Sunday evenings, according to a report to the Department of Commerce from Consul G. N. Ifft. The total attendance at these seven picture houses during the year 1922 was 1,540,229, as compared with 1,815,960 in 1921, and the total receipts from the sale of tickets was Kr. 1,838,818, as compared with Kr. 2,180,475 in 1921.

The population of Bergen is in round figures 100,000, and the attendance at the motion picture theaters was an average of fifteen shows for every man, woman, and child in the city. The average per capita expenditure for such entertainment was Kr. 18.39, or at average exchange, Kr. 5.75 to the dollar, \$3.20.

A majority of the films shown at Bergen are American, with German, Danish and Swedish films in lesser demand.


Motors Are Saving the Rural Schools

EIGHTEEN thousand rural schools are furnishing transportation for pupils to and from their homes. Through the motor bus the consolidated rural school is made possible and the number of consolidations is going forward at the rate of about 1,000 per year. There are still 180,000 one-room schools which should be consolidated. Since a consolidated school combines several adjacent school districts into one school, it means a larger and better-equipped schoolhouse; in the one-room rural school one teacher teaches all grades from the kindergarten to the eighth grade, while in the consolidated school each teacher instructs but two or three grades. This means fewer and more highly qualified teachers and better teaching.

—Power Wagon.

WHY THE SUBWAY IS THE SAFEST RAILROAD IN THE WORLD No. 3

**Our Men
KNOW
Their Jobs**



Subway Sun

Published now and then by the Interborough Rapid Transit Company

**Eternal
Vigilance**

WEEKLY OCTOBER 1922

Brakes

In the eighteen years' operation of the Subway, there has never been an accident from failure of brakes

Our Brakes are Electro-Pneumatic and our trains can be stopped quicker than on any other railroad

Interborough Rapid Transit Co.

THE Paving Tax

No. 4

IS THIS A FAIR DEAL?

1. The street car wheels do not run on the pavements.
2. Other vehicles—including buses—do.
3. Yet the Car Rider (in his car fare) pays the entire tax for laying and repairing pavements in the railroad area.
4. The owners of other vehicles pay nothing.

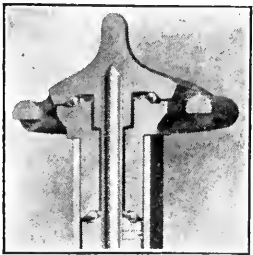
DO NOT BE TRIPPED UP BY THE TAX

PUBLIC UTILITIES ARE TELLING THEIR STORY TO THE PUBLIC

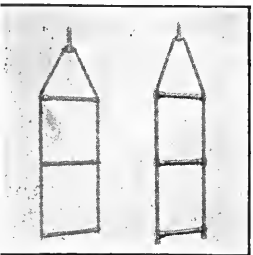
These two reproductions of cards displayed in the subway and street cars of New York are interesting examples of modern publicity by public utilities



Safety, Service and Durability are Exemplified in the Medart Giant Stride



Twenty-five ball bearings at top and thirteen below afford a frictionless, indestructible bearing.



Medart Giant Strides are equipped with steel ladders. Rope ladders can be substituted at slight additional cost.

EACH piece of MEDART Playground Apparatus has some outstanding features in design and construction which make for greater Safety, greater Service and greater Durability. For example, in the MEDART Giant Stride, the most important feature is the head-piece. It is made with a double set of ball bearings—25 balls at the top and 13 below. This construction allows it to turn smoothly without friction—resists wear—and equalizes the strain no matter from what angle applied.

MEDART PLAYGROUND EQUIPMENT

As a consequence of such features of recognized superiority, MEDART Equipment has been, for 50 years, the first choice of civic officials, physical directors, school boards, and others entrusted with the purchase of playground apparatus. MEDART prices are much lower than you would expect for apparatus of such outstanding merit.

Send for Catalog "M-6"

It illustrates the full line of Medart Playground Equipment. Also contains information on playground planning, based on our long experience in this work. This catalog sent free on request.

FRED MEDART MFG. CO.
Potomac & DeKalb Sts. St. Louis, Mo.

Also Manufacturers of Steel Lockers. Catalog on Request.

Municipal and Civic Publications

Prices do not include postage unless so stated

Highways and Highway Transportation.—By George R. Chatburn, A. M., C. E., Professor of Applied Mechanics and Machine Design, Lecturer on Highway Engineering, The University of Nebraska. Thomas Y. Crowell Company, New York, 1923. XX + 472 pp. Maps, photographs, diagrams. \$3.00.

A book for everyone who uses roads or finds their history, construction and development of interest. It shows how transportation and civilization have grown with each other; how waterways and railroads have developed; how automotive transportation has increased our facilities and altered our problems; how highway systems are planned and roads made durable; how production and marketing of all kinds of supplies have been affected by ease of transportation; how highways and their transportation lines are financed; how highway accidents may be lessened and highway travel may be made comfortable and attractive.

Sewerage.—By A. Prescott Folwell. John Wiley & Sons, Inc., New York, 1922. Ninth Edition. XII + 477 pp. Diagrams, views and tables. \$4.00.

This latest edition of Mr. Folwell's book brings up to date the various treatment processes that were in the development stage in 1918, when the eighth edition was published. The large increase in the number of sewage treatment plants has materially lengthened the list of such plants published in this text-book.

The Policeman.—By Cornelius F. Cahalane, Deputy Chief Inspector of Police, City of New York. E. P. Dutton & Company, 681 Fifth Avenue, New York, 1923. XIII + 354 pp. \$3.00.

The author's earlier book on "Police Practice and Procedure," prepared with special reference to New York City, brought forth a demand for a similar book applicable to all cities and towns in the United States and Canada. The present volume is the response to this demand. It gives information on all the various classes of duty which policemen are called upon to perform in the regular daily service, regardless of locality, and gives it clearly and definitely, with a high sense of the dignity and honor of the calling. The instruction given is so practical that the volume will serve excellently as a text-book for police training schools, and it may also be profitably read by the ordinary citizen.

Crucibles of Crime: The Shocking Story of the American Jail.—By Joseph F. Fishman, for many years only inspector of prisons for the United States Government in territory embracing the United States, Alaska and Porto Rico; and independent prison investigator and consultant for federal, state and municipal governments. Written in collaboration with Vee Perlman. Cosmopolis Press, New York, 1923. 299 pp. \$2.00.

The conditions described in this startling volume are stated to be typical of 85 per cent of the jails throughout the country—"a debauch of dirt, disease and degeneracy." In reading the book one must keep in mind that men and women confined in jails have been convicted of misdemeanors only, or have been only charged with committing misdemeanors or crimes and have not yet been tried—many of them innocent and eventually legally declared so; also that the author's purpose is to rouse the average citizen to work to prevent conditions that create, encourage or develop criminals and to secure the proper classification and treatment of offenders.

Preliminary Announcement of Manual of Information on City Planning and Zoning.—Including references on regional, rural, and national planning. By Theodora Kimball, Librarian, School of Landscape Architecture, Harvard University; Honorary Librarian, American City Planning Institute. The Manual is to be published at an early date, by Harvard University Press, Cambridge, Mass. This announcement contains 9 pp. of "City Planning Facts: An Introductory Statement of Principles and Procedure," taken from the Manual. The preprint was issued under the auspices of the National Conference on City Planning, 1923. (Apply to the publishers.)

Ventilation.—Report of the New York State Commission on Ventilation, appointed by the Governor of the State of New York at the request of the New York Association for Improving the Condition of the Poor, and supported by the Milbank Memorial Fund, established and endowed by Mrs. Elizabeth Milbank Anderson. E. P. Dutton & Company, 681 Fifth Avenue, New York, 1923. XXVI + 620 pp. Views, diagrams, tables. \$15.00.

The report is in two parts: I. A study of the Physiological Significance of the Various Factors in Ventilation, with Special Reference to the Effects of Air Conditions on Health, Comfort and Efficiency; and II, A Study of the Practical Results Achieved by the Use of Various Methods of Schoolroom Ventilation. Each part presents conclusions reached by the study. It is hoped that the volume will, in libraries, and in the hands of engineers, architects, school boards and superintendents, result in improved health conditions, particularly among school children. See page 571 of this issue.

Business Cycles and Unemployment.—Report and recommendations of a committee of the President's Conference on Unemployment, including an investigation made under the auspices of the National Bureau of Economic Research. With a Foreword by Herbert Hoover. McGraw-Hill Book Company, Inc., 370 Seventh Avenue, New York, 1923. XL + 405 pp. Tables, diagrams. \$4.00.

This report represents the work of the National Bureau of Economic Research for the last six months, under the direction of Dr. Wesley C. Mitchell, Director of Research, with the assistance of Government agencies, trade associations and public-spirited individuals. On the basis of this report, the Cycle Committee of the President's Conference on Unemployment made a number of recommendations which it believes will assist in mitigating the extreme hardships of unemployment. The report itself is merely fact-finding, and the Bureau, as an organization for impartial investigations, takes no responsibility for the conclusions drawn from the facts it has presented. The three parts of the report take up, respectively, a general description of business cycles, the known facts concerning the extent of unemployment, and the various proposals and attempts that have been made to meet the situation. The principle covered in Chapter XIV, by Otto T. Mallory, on "The Long-Range Planning of Public Works," was presented, and this volume referred to, in an article by Mr. Mallory entitled, "Getting the Jump on Unemployment," in THE AMERICAN CITY for January, 1923, page 2. Chapter XVI, on "Public Employment and Unemployment," will also be of especial interest to our readers.

The Empire Municipal Directory and Year Book for 1923-24.—Published by Municipal Engineering and the Sanitary Record (The Sanitary Publishing Co., Ltd.), 8, Breams Buildings, E. C. 4, London, England. 1923. 348 pp. With diary pp. for year beginning April 1, 1923. 10s. 6d.

An encyclopedia of municipal, highway engineering and public health work, containing complete revised lists of all corporations, county, urban and rural district councils in Great Britain and her overseas dominions, with corrected lists of names of county and municipal officials and local undertakings owned by each council. With articles written by specialists in road construction and maintenance, lighting, sewerage, building, and other public improvements and services.

A Man from Maine.—By Edward W. Bok. Charles Scribner's Sons, New York, 1923. XV + 279 pp. Illustrated. \$3.00.

The story of the business life of Cyrus H. K. Curtis, so presented as to show the romance and adventure that business holds for young men of eager and alert mind, and to emphasize the essentiality of character in winning success.

Ninth Yearbook of the City Managers' Association.—April 1, 1923. 255 pp. Illustrated. Price, 50 cents. See page 601 in this issue. (Apply to John G. Stutz, Executive Secretary of the Association, Lawrence, Kans.)

THE AMERICAN CITY

HOLLOWSPUN

LIGHTING STANDARDS



Park Lighting in Fond du Lac, Wis.
Described in "Hollowspun Standard No. 2."

AN installation of Hollowspun reinforced concrete lighting standards is not only pleasing but economical.

Take for instance the case of Fond du Lac, Wis. The city officials in their preliminary investigation were particularly attracted to the Hollowspun standards by their appearance and cost. The first installation comprised only 17 poles in Lakeside Park. Later they were used in lighting two new bridges, and later still, an installation of 1.3 miles was made on the main business street.

This clearly indicates that these standards can be economically used whether the appropriations are small or large.

MASSEY CONCRETE PRODUCTS CORPORATION
Peoples Gas Building Chicago

Model Ordinance to Regulate the Planting, Maintenance, Protection and Control of Shade Trees in City Highways and Public Places.—Data gathered by the New York State Bureau of Municipal Information. April 27, 1923. 6 large mimeographed pp. Including every suggestion and idea in ordinances of similar character effective in one or more American cities and legal in New York State. (Apply to the Bureau, Albany, N. Y.)

Our City Thoroughfares—Shall They Be Highways or Garages?—By Herbert S. Swan. A consideration of the parking problem, showing causes of congestion and means of relieving it. 4 quarto pp. Illustrated. Reprint from "Motor World" of September 27, 1923. (Apply to author, 15 Park Row, New York.)

Speeding up Traffic at Street Intersections.—By Herbert S. Swan, city planner. 8 quarto pp. Diagrams. Reprinted from "Engineering News Record" of March 1, 1923. Showing that slow-ups and hold-ups at intersecting streets are some of the chief causes of automobile traffic congestion, and outlining relief measures. A traffic survey is stated to be essential. (Apply to author, 15 Park Row, New York, N. Y.)

Making 'Em Ride.—By Walter Jackson, fare and bus consultant, Mount Vernon, N. Y. 4 pp. Reprinted from "National Municipal Review" of March, 1923. How the weekly street car pass increases car riding, speeds up community activity and increases good will, and takes the rate of fare out of politics. A list of cities that are using this system. (Apply to author, 143 Cray Avenue, Mount Vernon, N. Y.)

Newport Makes Progress in Mosquito Control.—Outline of work accomplished in 1922 under the direction of Dr. Frederick P. Gorham, of Brown University, and Lawrence K. Ebbs, C. E. With financial report. In "Newport Bulletin," published by the Newport Chamber of Commerce Inc., April 5, 1923. 6 pp. Illustrated. Funds for this work were supplied by public-spirited individuals. (Apply to the Newport Chamber of Commerce Inc.)

Human Nature, Efficiency and Electricity.—"The Strange Story of Ontario." Bulletin No. 83, April 10, 1923, of the National Popular Government Motion, 637 Munsey Building, Washington, D. C. By Judson King, Director. 10 large mimeographed pp. Showing what the great hydro-electric plant in Ontario is doing in supplying light and power to cities, towns and farm homes at such low rates that business men and housekeepers are enthusiastic over the service. (Apply to the Director of the League.)

Priceless Gifts.—A civics pageant prepared by Mrs. J. Q. A. McDowell, for The Woman's Club of Danville, Ky. For presentation by seven women. 8 pp. Setting forth the power of aroused public opinion and the great value of health, patriotism, Christian education, and community spirit. Price, 50 cents. (Apply to Mrs. George R. Hilman, President, Woman's Club, Danville, Ky.)

City Tax Rate Bulletin for 1922 [Kansas].—A compilation of the city, school and county tax rates effective for 542 cities in Kansas, together with their population, assessed valuation and bonded indebtedness. Bulletin No. 37, compiled by the Municipal Reference Bureau, University Extension Division, University of Kansas, Lawrence, Kans. April 1, 1923. Tables. Price, 25 cents. (Apply to the League of Kansas Municipalities, Lawrence, Kans.)

Federal, State, and Municipal Aid to Housing, 1918 to 1922.—A selected bibliography. By Ellen Agnes Hoffman. 19 pp. in "Monthly Labor Review," published by the Bureau of Labor Statistics, U. S. Department of Labor, Washington, D. C. February, 1923. Price, 15 cents. (Apply to the Government Printing Office, Washington, D. C.)

The Neighborhood: A Study of Local Life in the City of Columbus, Ohio.—By Roderick Duncan McKenzie, University of Washington. Published by the University of Chicago Press, Chicago, Ill. 1923. XI + 111 pp. Maps, tables. Reprinted from "The American Journal of Sociology," September, 1921. "The findings revealed in this study may now have but historic significance. The method employed, however, may possess elements of more permanent value." (Apply to the publishers.)

A Brief Manual of Games for Organized Play.—Adapted from standard sources by Martha Travilla Speakman. Publication No. 113 of the Children's Bureau, U. S. Department of Labor, Washington, D. C. 1923. 37 pp. Directions for 70 games are given. Prepared at the request of the Commissioner of Education of Porto Rico, and in conference with the teachers of Porto Rico, while the Children's Year Survey was in progress in the island. Price, 5 cents. (Apply to the Bureau.)

Standard Methods of Milk Analysis.—Bacteriological methods formulated by committees of the Laboratory Section of the American Public Health Association, American Dairy Science Association, International Association of Dairy and Milk Inspectors and other interested persons, and approved for publication by the Laboratory Section of the American Public Health Association at the Cleveland meeting, October, 1922. Chemical methods compiled by the Committee on Editing Methods of Analysis of the Association of Official Agricultural Chemists and approved for this publication by that Association at its annual convention in 1922. Fourth edition. 40 pp. Price, 40 cents. (Apply to the American Public Health Association, 370 Seventh Avenue, New York, N. Y.)

Recreation Training School of Chicago—Announcements 1923-1924.—This school is the successor to the Recreation Department of the Chicago School of Civics and Philanthropy, and gives training for both men and women. The summer term is for five weeks, from July 2 to August 3, 1923. (Apply to the School, at 800 South Halsted Street, Chicago, Ill.)

Trend of Teachers' Salaries.—By Don C. Rogers. Extension Division Bulletin No. 88 (April 1, 1923) of the State University of Iowa, Iowa City, Iowa. 29 pp. Tables, diagrams. The information represents all sections of Iowa, and the facts are interpreted and arranged in convenient form. The report is for the spring of 1923 and is supplemented by information on the cost of living for teachers and a comparison of teachers' salaries during the last ten years with those of the Civil War period. (Apply to the University.)

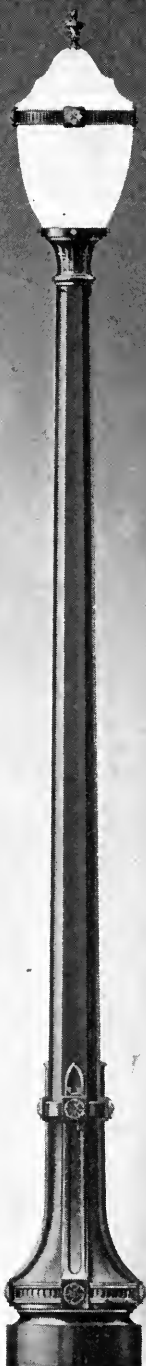
The Thousand Dollar Prize Programs.—Sixteen Study Outlines in Government and Civics—Compiled for the use of women's clubs, civic leagues and all organizations interested in better government and community service, by Anna Steese Richardson, Director of the Good Citizenship Bureau of the "Woman's Home Companion." Published by the Crowell Publishing Company, 381 Fourth Avenue, New York, N. Y. The first prize was awarded to the Maryland Federation of Women's Clubs, Central District, Baltimore, in the contest announced in the "Woman's Home Companion" for November, 1922. Price, 10 cents. (Apply to the publishers.)

Organization of the Public Welfare Agencies of St. Louis County, Minn.—A report upon the number, cost, and extent of service of the various welfare agencies existing in the county, supported entirely, or in the main, from public tax money. With recommendations based on the results of an investigation, and a study of progress made in other localities. Prepared for Senator Fred E. Besette, Sixtieth State Senatorial District, by the Taxpayers' League of St. Louis County. January, 1923. The bill appended combines the ideas presented. 82 pp. (Apply to Robert M. Goodrich, Executive Secretary, Taxpayers' League, Duluth, Minn.)

Report to the Board of Local Improvements, Chicago, Ill.—The work of M. J. Faherty, President of the Board, Associates and Staff, 1915-1923. A survey by J. H. Prior, consulting engineer. 33 quarto pp. Many illustrations. Describing and illustrating the local improvements, such as streets, pavements, bridges, etc., constructed from funds raised by taxation, and the consequent private improvements, such as hotels, depots, office buildings, etc., with some reference to improvements in Washington, D. C., and Paris, France. (Apply to the Board of Local Improvements, Chicago, Ill.)

The Committee of Fourteen in New York City.—Annual Report for 1922. 52 pp. This committee is supported by voluntary contributions and cooperates with public officials, private agencies and individuals. Of particular interest to readers of THE AMERICAN CITY are the report of the Women's Court in Manhattan and the Bronx, and the section on Prostitution and Recidivism, the latter being a study of the records of 6,384 individuals convicted in the Women's Court, 1916-1920, and of the sentences imposed. (Apply to Frederick H. Whitin, Secretary of the Committee, 27 East 22nd Street, New York, N. Y.)

A Review of the Surveys of the Cleveland Foundation.—By Raymond Moley, Director of the Cleveland Foundation. 1923. V + 43 pp. Diagrams of crime reduction in Cleveland during three years. See p. 629 in this issue giving the results of surveys on education, recreation, criminal justice, and relief agencies, besides a study of local teaching training, and a general statement of the purpose and policy of the Cleveland Foundation, with conclusions leading to the statement that the survey policy has been well justified by its results. (Apply to the Foundation.)



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National Institute of Public Administration: Announcement of Courses 1923-1924.—A 16-page pamphlet, giving full information regarding the courses in public administration offered by the Institute, covering charters and municipal corporations, budgets and budget making, public accounting and financial reporting, civil service and personnel, purchasing and storing of supplies, taxation and revenues, public debt, engineering administration, police and fire, public welfare, education, statistics and graphic methods, and minor problems, as well as two general courses. The training work begins September 17 and closes May 10, and is followed by an apprenticeship in public administration, lasting from three to six months. (Apply to the Institute, at 261 Broadway, New York.)

Metered Water Rates for Detroit.—By George H. Finkell, General Manager, Department of Water Supply, Detroit, Mich. January 29, 1923. A revised and corrected issue of a paper entitled "Meter Rates for Detroit," published July 25, 1922. 88 pp. Giving information on which a new rate for metered water should be based. (Apply to the author.)

A Brief for the Lincoln Highway in Utah and Nevada.—Addressed to the Secretary of Agriculture, Washington, D. C. A study of Western road strategy designed to aid in determining the road of most immediate importance connecting Salt Lake City, Utah, with California. March 15, 1923. Prepared by the National Headquarters, The Lincoln Highway Association, Inc., Detroit, Mich. XIV + 172 pp. Map, views. Presented as proving that the Lincoln Highway west of Salt Lake City is the one route of first national, strategic, correlating importance to serve all travel to the Pacific Coast south of Portland, Ore. (Apply to the Association Headquarters.)

Chicago—Eight Years of Progress.—An account of the accomplishments of the city from 1915 to 1923, presented in the form of reports from the various departments, with an introduction by Mayor William Hale Thompson. 154 pp. Views, maps, charts. (Apply to the Municipal Reference Library, 1005 City Hall, Chicago, Ill.)

The Cook County Jail Survey.—Made on request of the Board of County Commissioners, by the Chicago Community Trust. Summarized by Frank D. Leomis, Secretary of the Community Trust. 1922. 28 pp. Reviewing the facts and conclusions of the original report. (Apply to the Chicago Community Trust, 10 South La Salle Street, Chicago, Ill.)

Minnesota Public Utility Rates: Electric—Gas—Water—Heat.—Compiled by the Municipal Reference Bureau of the General Extension Division of the University of Minnesota, Minneapolis, Minn. August, 1922. Publications, No. 1. 88 pp. Price, \$1.50. Designed to be of practical value to city officers in casting light on some of their perplexing questions in dealing with public utility companies. (Apply to Richard R. Price, Director of University Extension.)

Ninth Annual Report of the Commission of Immigration and Housing of California.—123 pp. Illustrated. January 9, 1923. Not only an account of the progress made in 1922, but a bird's-eye view of the entire nine years of the Commission's existence. The Commission's policy is one of education and persuasion, employing the force of law and authority only as a last resort. (Apply to Paul Scharrenberg, Secretary of the Commission, San Francisco, Calif.)

Common Forest Trees of North Carolina—How to Know Them.—A pocket manual prepared by J. S. Holmes, State Forester, North Carolina Geological and Economic Survey, with the collaboration of the State Foresters of Tennessee, Virginia and Maryland, and the help and advice of the Forest Service, U. S. Department of Agriculture. 77 pp. Drawings characterizing each tree, with clear description. Price 10 cents a copy for orders of 5 or more. (Apply to the North Carolina Forestry Association, Chapel Hill, N. C.)

The Zoning Plan in Suburban New York and Long Island.—By Edward M. Bassett, Counsel of the Zoning Committee of New York. Reprinted from the "Brooklyn Daily Eagle." 8 pp. Explaining the fundamentals and advantages of zoning, with particular reference to the environs of New York City. Price 10 cents. (Apply to the "Brooklyn Daily Eagle," Brooklyn, N. Y.)

The County Jail Must Go.—Published by the Prison Association of New York. 1923. 7 pp. Illustrated. Showing the defects of the present jail system of New York State, and giving an outline of remedial efforts under way. A brief bibliography is given. (Apply to the Prison Association of New York, 135 East 15th Street, New York, N. Y.)

Tourist Camps.—By Rolland Wallis, Municipal Engineer. Bulletin 56 of the Engineering Department of the Iowa State College of Agriculture and Mechanic Arts. February 7, 1923. 83 pp. Illustrated. "The purpose of this publication is not to describe any particular tourist camp, but rather to describe the equipment and maintenance of a sort of composite camp, in such a manner as may best assist the many communities that contemplate equipping such camping grounds. . . . Based on the results of an extended investigation and . . . representing the opinions and ideas of many individuals who have had experience in maintaining tourist camps." (Apply to the Engineering Extension Department of the College, at Ames, Iowa.)

Minor Highway Privileges as a Source of City Revenue.—A report of the National Municipal League Committee on Sources of Revenue. Supplement to the "National Municipal Review" for May, 1923. 12 pp. Based on material prepared by Miss Mabel Newcomer, Ph. D., Professor of Economics at Vassar College. Showing how certain minor highway privileges represent the use of public property by private individuals for personal profit, and that they should be made to return a very considerable revenue to the public treasury. (Apply to the National Municipal League, 261 Broadway, New York, N. Y.)

How to Plan a Successful Convention.—By Anna Steese Richardson, Director, Good Citizenship Bureau, "Woman's Home Companion." 6 mimeographed pp. Price, 4 cents. Definite instructions for dividing the work, arranging for transportation, decorations, publicity, mechanical details, various sessions and functions. (Apply to the Good Citizenship Bureau, Woman's Home Companion, 381 Fourth Avenue, New York, N. Y.)

Community Value of the Consolidated Rural School.—A study in rural community organization, by Augustus W. Hayes, Assistant Professor of Sociology, the Tulane University of Louisiana, New Orleans, La. Research Bulletin No. 2, February, 1923. 45 pp. Illustrated. Based on a personal and statistical study of consolidated schools in Louisiana, Mississippi and Alabama. Placing a high estimate upon the value of the consolidated school as a basis for the complete organization of rural community interests.

The Complete Camp Site Guide and Latest Highway Map of U. S. A.—Together with Official Directory of Aeroplane Landing Fields. 1923 edition. Published by The United States Touring Information Bureau, Inc., Waterloo, Iowa. X + 115 pp. 2 large maps, showing the location of landing fields in all states, and all the established auto camp sites. Published especially for the National Aeronautic Association for distribution to its members, with the cooperation of the U. S. Army Air Service in making the list of landing fields complete. (Apply to the publishers.)

Water Power and Statesmanship.—By Guy E. Tripp, Chairman of the Westinghouse Electric and Manufacturing Co. Reprinted from "The New York Times" of March 11, 1923. A plea for recognition of the fact that large water powers are a resource of the entire nation and should be developed on the best engineering plans, to benefit the greatest possible number of people. 16 pp. Illustrated with a map of the Southern Super-power System, and one of a proposed Super-power System for Northeastern America. Showing that the key to the latter system lies in New York State, and looking to Albany to open the way for co-ordinating present power systems and unused water powers for the benefit of the people of the United States and Canada. (Apply to Department of Publicity, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.)

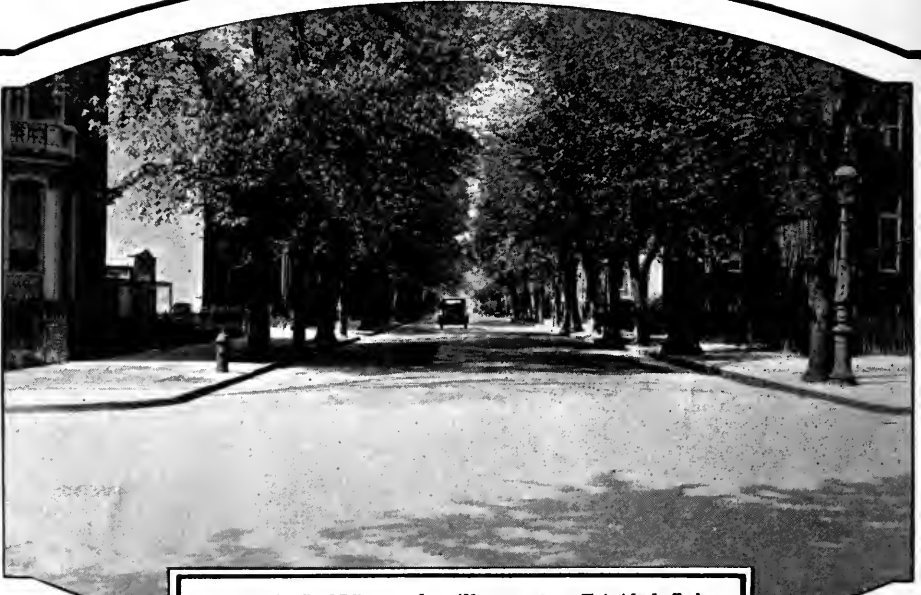
Proposed Zoning Ordinance for the City of Seattle, Wash.—Prepared by the City Zoning Commission. Preliminary copy. Quarto. 14 pp. (Apply to the City Zoning Commission, 602 County-City Building, Seattle, Wash.)

Baltimore, Md.—Annual Report of the Superintendent of Lamps and Lighting to the Mayor and City Council for the fiscal year 1922. (Apply to John J. Hanson, Superintendent of Lamps and Lighting.)

Franklin, N. H.—Annual Report of Board of Water Commissioners for the year 1922. (Apply to Harry E. Lyon, Superintendent of the Board.)

Portland, Ore.—Annual Report of the Department of Public Works for the fiscal year ending November 30, 1921. (Apply to A. L. Barbur, Commissioner.)

Seattle, Wash.—Annual Report of the Department of Lighting for the year 1922. (Apply to J. D. Ross, Superintendent of Lighting.)



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The maintenance cost on this pavement for the past 14 years has been *less than two cents per square yard per year*—the exact figures being \$.01957.

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News for City and County Engineers, City Managers, Water-Works Superintendents, City Controllers, Park Superintendents, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

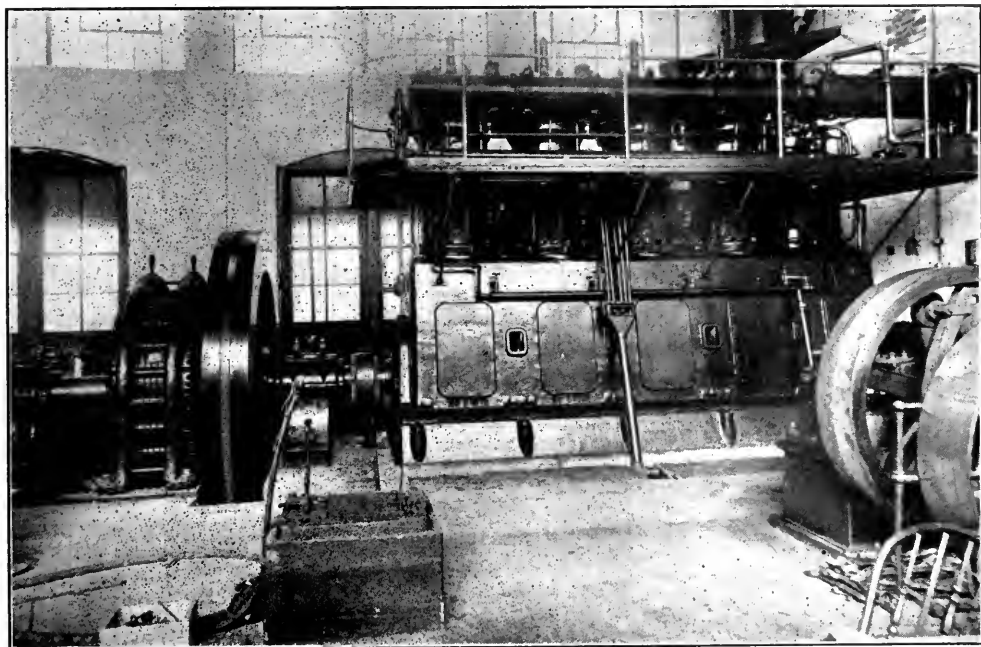
The Diesel Engine in Municipal Power-Plants

The 400-brake-power Diesel engine illustrated below drives a 280-kilowatt, 200-r.p.m., 60-cycle electric generator in the municipal power-plant at Horton, Kans. Many people have come to think of a central electric station as containing enormous units with a tremendous total of output. As a matter of fact, the output of a station is determined by the size of the community it serves, and for this reason a great proportion of the 55,000,000 horse-power installed in central stations and industrial plants in the United States is turned out from stations of moderate size, not unlike the municipal station at Horton, Kans.

Moderate-size steam plants are very inefficient and, in the plant shown below for the same load, the daily fuel-oil requirements were reduced from 2,040 gallons to 276 gallons by changing from steam operation to Diesel operation.

A central station load consists of both motors and lights and demands of the prime mover extremely good regulation so that the lights will not be affected by variations in the motor load. The arrangement of the governor on the Diesel engines made by the McIntosh & Seymour Corporation, Auburn, N. Y., makes these engines particularly well adapted for this service, because the fuel for each cylinder is delivered by a separate fuel pump driven directly by the governor without any relay device, so there is an instant response in power for any demand on the load.

In moderate-size power-plants the attendance cost is one of the big items of the total cost, and with steam plants it is necessary always to have one or more men in the boiler-room, not only to do the firing, but also to keep the boiler properly supplied with water, as a neglect of this might cause a disastrous explosion. With a Diesel plant, this boiler-room labor is entirely eliminated, making a very material reduction in the attendance cost.



A 400-BRAKE-HORSE-POWER DIESEL ENGINE, DRIVING A 280-KW., 200-R.P.M., 60-CYCLE GENERATOR IN THE MUNICIPAL POWER-PLANT AT HORTON, KANS.

THE AMERICAN CITY

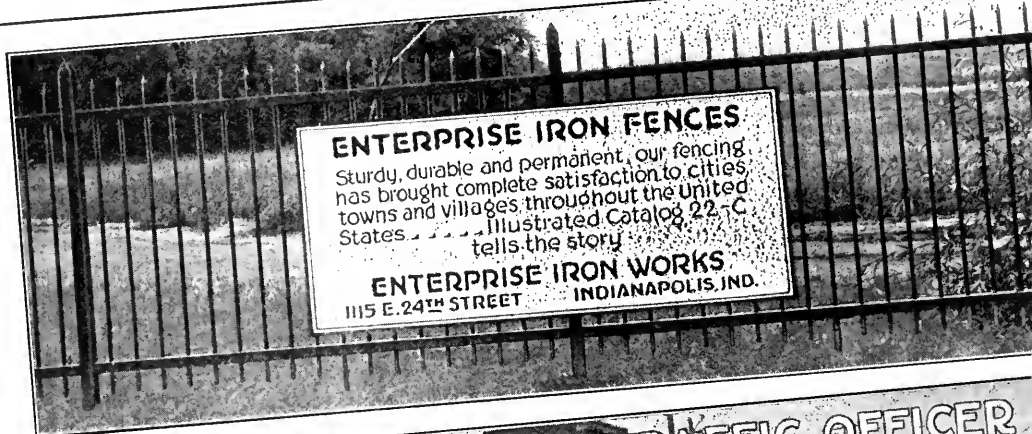
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 EAST CHICAGO INDIANA

Advertisers please mention THE AMERICAN CITY.

According to C. E. Guenther, Superintendent, Light and Water Department, Horton, Kans., the experience with their first Diesel engine was so favorable that a second unit was purchased after a year's run without any additional bond issue. The fuel consumption of the steam unit was about .03 cents per kilowatt. The fuel consumption cost for the Diesel is about .006 cents per kilowatt. On a variable load of 40 to 240 kilowatts, it will average 9 kilowatts per gallon, using also 1½ to 2 gallons of lubricating oil in 24 hours.

A New Model Lawn-Mowing Unit

The 1923 model lawn-mowing unit brought out by the Worthington Mower Company, Shawnee-on-Delaware, Pa., has been built particularly to operate under the severest conditions of horse-drawn or tractor service. It has automatic adjustment of the bed knife, which does away with all set screws. No wrenches are needed for it. All adjustments can be made with the fingers. The usual cast iron bed-knife backing has been replaced by a rigid steel section that cannot warp or break. There is also a release which throws the cutters out of commission when not cutting, thus saving them from any possible damage when not in service. The gears operating the knives are machine-cut. They run in oil with splash lubrication, and have tight housings to eliminate dust and grit. A steel tube takes the place of the common wooden roller, and all parts of the mower are interchangeable, thus facilitating replacements. The company claims that this model represents "the last word" in lawn-mower units.

A New Repair Tool for Water Services

Not infrequently water service stop-cocks fail and must be replaced. It has been necessary in the past to dig up the street in order to shut off water at the corporation cock or shut off the water-main. The former frequently meant cutting asphalt or brick paving, and introduced a distinct element of risk in having an open hole in the street. Shutting off the main is most undesirable even in small communities, and in large cities it is a matter of

extreme seriousness. The job of renewing a stop-cock has sometimes been handled by freezing the service pipe, but this scheme is very uncertain and sometimes fails, thus necessitating, after all, the shutting off of the main.

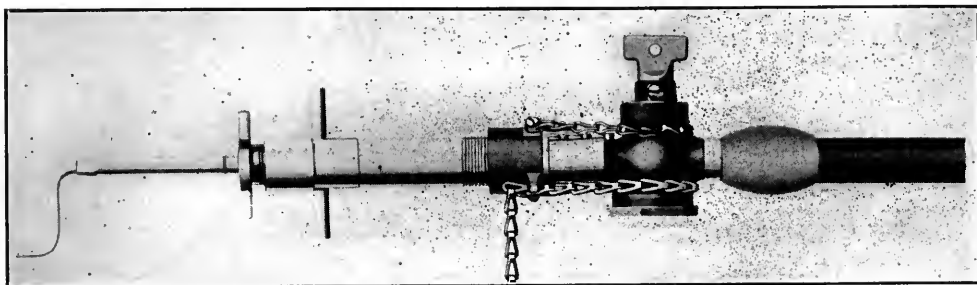
To avoid these difficulties, the Ford Meter Box Company, 406 S. Carroll Street, Wabash, Ind., has brought out the Ford Service Packer for use in replacing ⅝- and ¾-inch round way stops.

In using this tool, a packer head of the proper size for the pipe is attached to the stem. The stem is drawn back so that the packer head is entirely housed in the housing chamber. Then with the stop shut off, the housing chamber is screwed into the stop and the cock opened. The packer stem is then pushed into the pipe through the cock, so that the packer head is well back of the stop. The packer head is then expanded by turning the crank at the head of the stem until it takes firm hold from the inside of the pipe. When this is done, the housing chamber is unscrewed from the stop-cock and withdrawn, leaving the stem in position. The stop-cock may then be removed and a new one placed in position. After this is done, the housing chamber is slipped back over the packer stem and screwed into the stop. The packer head is then released by reversing the crank and the stem withdrawn, so that the packer head is back within the housing. The stop is then shut off and the service packer removed. Thus the job is handled easily without undue expense incident to shutting off the main, and without digging up the street.

It is sometimes found that threads on the end of the service pipe have become rusted and new threads must be cut. This sometimes means that a burr will be left on the inside of the pipe through the use of a wheel cutter. The burr must be removed, and this can be done with a new special hollow reamer, which is an extra piece of equipment with the new Ford Service Packer.

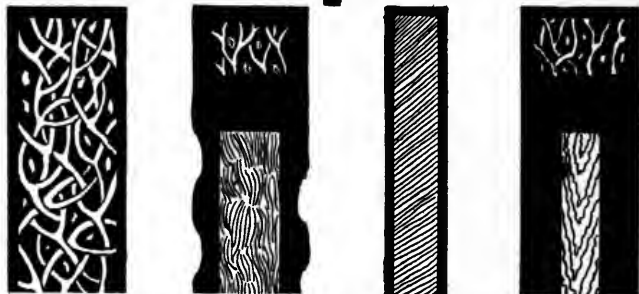
Dorr Company Moves Offices

On May 12, 1923, the Dorr Company, engineers, moved its New York office to the Park-Lexington Building, 247 Park Avenue, New York City.



A NEW TOOL FOR REPAIRING CURB STOPS

Servicised Expansion Joints

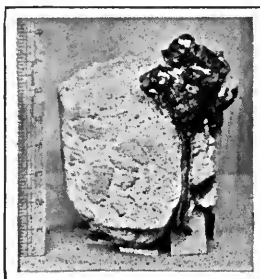


MONITORS OF THE ROAD

Old principles of expansion joint provide fillers of solid asphaltic content or impregnated fibre and asphalt in an elastic mass. ¶ The fundamental purpose of the filler is to re-occupy the space left by two contracting slabs. ¶ Solid asphaltic or impregnated fibrous materials contract, concrete slabs likewise contract on cooling. ¶ Three contracting bodies cannot occupy the same space as when expanded. Servicised Joints *expand* when the concrete slabs contract. ¶ This is the key to a permanent waterproof joint; a correct answer to the problem of expansion between two contracting bodies. Unimpregnated cellular fibrous matter in Servicised Joints brings about this re-expansion after compression is relieved.

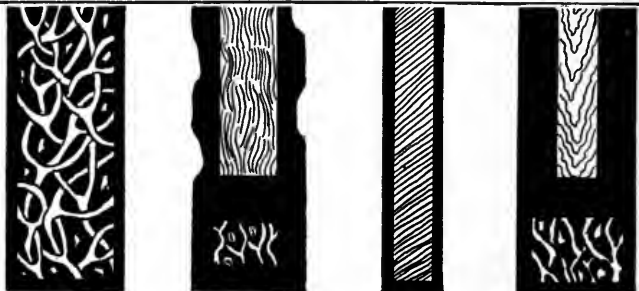
Trapped Under Compression: The print to the right is an example of oozing under compression. Due to the hard asphalt surfacing over the concrete base, the traffic could not carry the surplus away because it was locked in between the asphalt surfacing and base. The force was great enough, however, to form bulges in the hard asphalt surface.

**Write Us About Your
Expansion Joint
Problems**



A Bituminous and Impregnated Fibre or Elastic Mass: No better proof of indiscriminate oozing. No better illustration of the need of expansion joint of the proper kind. The action in this instance resembles that of paste in a tube being squeezed with one side open. Action of this kind causes tremendous waste, without resulting in good. Servicised Joints will prevent this.

Servicised Products Co.
First National Bank Bldg.
CHICAGO



TYPE B
75% Bitumen
25% Cellular Fibre

TYPE D
Self-Expanding
Non-Raising

TYPE C
Felt Center—Coated
Sides—Sidewalk Joint

TYPE AA
3/16 Veneer Core

Four Types of Servicised Expansion Joints



in Which the Oozing Tendency Is Controlled

Servicise the Crevice and Save the Road

Error in Mention of Ogden, Utah, Air Lift Installation

The Sullivan Machinery Company, Chicago, Ill., has asked THE AMERICAN CITY to call attention to an error in its advertisement in the May issue. It was stated that the air lift was experimented with on account of "constantly decreasing natural flow." This should have read, "constantly increasing demand." There are 34 wells at Ogden, Utah, and not 36. When Sullivan equipment was installed in the 8 experimental wells, the flow increased to 500 gallons per minute on the average for 6-inch wells, and this flow has been maintained since that time whenever required, and not at all times, as stated in the advertisement.

Refuse Disposal Engineers

The members of the firm of Jones & Very, Inc., 60 Wall Street, New York City, have been engaged for some fifteen years in different municipal projects for cities. Their experience has included sewage, water and paving work, but in later years has been more or less specialized on waste collection and disposal.

This firm has become the licensees in the United States for the Heenan & Froude type of British destructors for garbage and refuse disposal. They are recommending this type of destructor, as they believe the high-temperature furnace best lends itself to the destruction of these classes of waste. They are prepared, however, to design more moderate-temperature furnaces if they are desired.

A Small Community Fire Pump

One of the most recent developments in fire-fighting apparatus for small communities consists of a 5-horse-power, double-cylinder throttle-governed gasoline engine, direct-connected by means of broad-faced machine-cut gears to a 3 by 3½-inch triplex pump, delivering 4,800 gallons of water per minute at 100 pounds pressure. The engine of this fire pump, which has been developed by Schramm, Inc., West Chester,

Pa., is of the double-cylinder, horizontal type, each cylinder having a 3¾-inch bore and a 4½-inch stroke. The speed control is of special design to suit this particular engine. Operating at its full rated speed, 690 revolutions per minute, the engine develops 5.529 brake horsepower.

The entire equipment is mounted on a sturdy rubber-tired truck with drawbar, equipped with a basket for holding the discharge hose. The basket is also equipped with a bracket for holding the suction hose in place. The entire outfit, without the hose, weighs 1,400 pounds and is so light that it can be attached to a motor-cycle with a side-car, an automobile or wagon, and hauled over rough country roads to a fire. It can also be easily hauled by two men.

Added Water-Supply Service for Deep Well Users

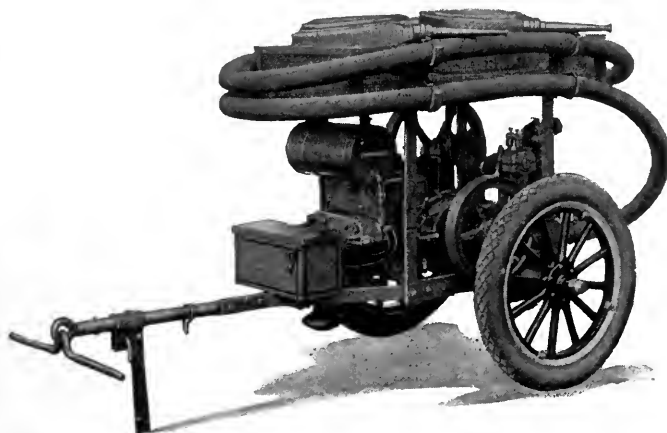
The Layne & Bowler Company, Memphis, Tenn., water-supply contractors, whose motto is "Water or No Pay," has recently organized six associate contracting companies. The purpose of this expansion is to render a more prompt and efficient service to the customers. These companies are located as follows: Layne-New York Company, Inc., 1871 50 Church Street, New York City; Layne-Bowler-Chicago Company, 860 Old Colony Building, Chicago, Ill.; Layne-Arkansas Company, Stuttgart, Ark.; Layne-Southeastern Company, 316 First National Bank Building, St. Petersburg, Fla.; Layne-Central Company, Memphis, Tenn.

Each individual company is located in the approximate center of its allotted territory and by virtue of this fact has the men and equipment available in a fraction of the time formerly consumed when all of the business was handled from the Layne & Bowler Company at Memphis. The associate companies are complete within themselves; each has its own officers, men and equipment.

Increase in Tractor Prices Effective July 1

Monarch Tractors, Inc., Watertown, Wis., has announced that on July 1, 1923, there will be an increase in the prices of the three types of Monarch tractors, made necessary by the increase in prices of all materials going into their construction, and the prospect of still higher prices. The Model C 20-30 tractor will be priced \$3,800, Model 4-40, \$4,350, and Model 6-60, \$5,750.

All of these prices on Monarch tractors are f. o. b., Watertown, Wisconsin.



A MOTOR FIRE PUMP THAT MAY BE HAULED BY HAND OR AUTOMOBILE

THE AMERICAN CITY

For CONCRETE CURING



CALCIUM CHLORIDE

THE OLD, laborious and expensive method of curing concrete by ponding or by blanketing with dirt and straw and sprinkling with water is entirely done away with by the up-to-date Calcium Chloride method of concrete curing.

Solvay free-running Calcium Chloride is applied direct to the bare concrete, and requires no further attention, no sprinkling, no dirt, no straw. Roads are ready for service in as little as 10 days time. Ordinary laborers with hand shovels do the work quickly and efficiently.

The proper amount of moisture is automatically and chemically maintained and this relieves the engineer of the responsibility of inspecting for proper sprinkling each day; the contractor also is benefited because results are certain, quick O. K'ing of the road is assured and his money comes in so much sooner. The Solvay method is the right way for all; saves time, money, labor,—gives the community its road sooner and assures long wearing concrete.

use

SOLVAY
Free Running
Calcium Chloride

Used on the Ideal Section of the Lincoln Highway and endorsed by leading engineers in every state in which it has been used. Shipped in 375 lb. non-returnable drums or easy to handle 100-lb. moisture proof bags from fifty convenient distribution points in the United States.

Write us your specific problems, our engineers will be glad to help you. Illustrated folder free on request. Write!

The SOLVAY PROCESS CO., Dept. J Syracuse, New York

Swimming Pool Filtration Equipment at Janesville, Wis.

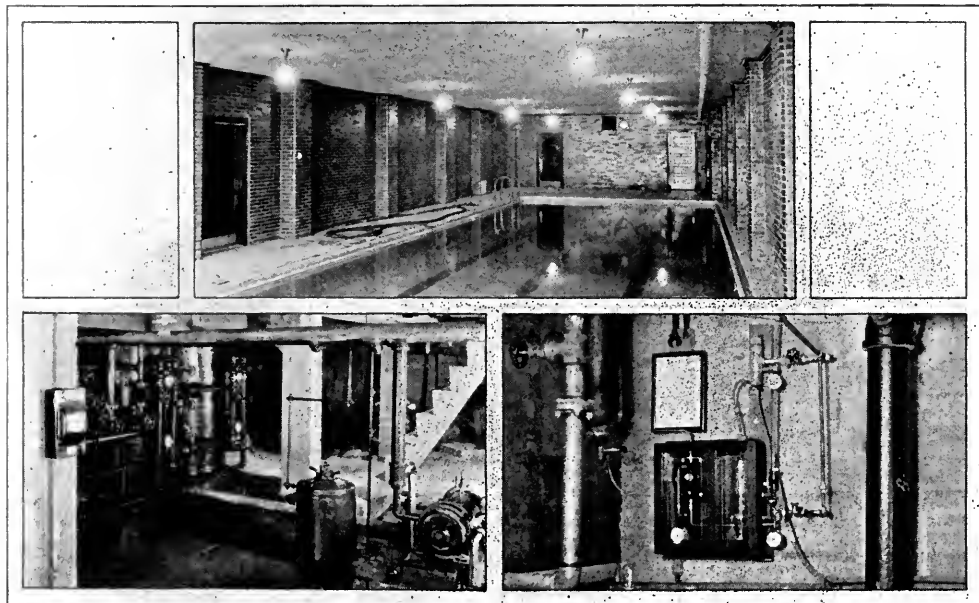
A refiltering and recirculating equipment has been installed for the swimming pools in the new high school at Janesville, Wis. There is one pool for boys and one for girls. Each pool is 20 feet wide by 60 feet long, 3 feet deep at the shallow end, and 7 feet 6 inches at the deep end. The capacity of each pool is 55,000 gallons.

The filters consist of four Type V4 pressure water filters made by the Graver Corporation, East Chicago, Ind. Each filter is 4 feet in diameter by 6 feet 6 inches high. The filter-bed itself consists of a layer of 6 inches of coarse gravel, 6 inches of fine gravel, and 24

on the surface of the filter, which strams out the finest sediment and smallest bacteria.

After leaving the filters the water is dosed with liquid chlorine from a Type MSAM Wallace and Tiernan chlorinator and is then carried to the shallow end of the pool. The filters are in operation approximately 10 hours each day. The pool is heated by means of live steam introduced directly into the pool. This high school building was designed by Van Ryn & De Gellecke, Caswell Block, Milwaukee, Wis.

The pool is supplied with a Tuec vacuum cleaner for removing the heavier sediment that is not carried along the bottom of the pool by the movement of the water. This cleaner is made by The United Electric Company, Cleveland, Ohio.



NEW SWIMMING POOL AND EQUIPMENT FOR JANESVILLE, WIS., HIGH SCHOOL

Top—General view of swimming pool. At left—Filters, circulating pump and coagulant pump. At right—Chlorinator for sterilizing the pool

inches of fine crushed quartz. The manifold collection system is of the orifice type. Each filter has a capacity of 38 gallons per minute, figured on the basis of 3 gallons per minute per square foot of filter area.

The water is drawn from the deep end of the pool and circulated through the filters by a 2-inch Union centrifugal circulating pump which is direct-connected to a 5-horse-power motor. The alum solution is introduced into the water immediately after leaving the pump, which allows it to become thoroughly mixed with the water before entering the filters. The alum solution is contained in a coagulant pot seen near the pump at the right of the left-hand illustration. Its introduction is automatically controlled by means of a Venturi tube and graduated needle valve. The alum is used to assist in the formation of a very fine mat

Asphalt Tool and Pavement Heaters

Shortage of labor for street and highway repair work has caused added interest in oil-burning apparatus for repairing asphalt streets with greater efficiency and economy than by the use of manual labor alone. The wide necessity for increased economical maintenance of asphalt pavements, the advantage of hot patching, and the saving of both time and money, secured by the use of improved machinery, have focused attention on apparatus for rapid street repairing.

About five years ago machines for this work made by the Chausse Oil Burner Company, 206 Lincoln Building, Detroit, Mich., were introduced to street and highway departments. With improvements made in these machines and with ample production facilities, the Chausse

Streets

*should be made essentially as safe
by night as by day—as regards:*

- A. Collision and Accident. Dense traffic and high speed driving make good light steadily more important.
- B. Burglary and Attack. Cleveland reduced crime 60% in its business district by improving its lighting with Holophane Refractors; the criminal fears light more than the gun.

The way to do it:



Holophane Prismatic Street Lighting Refractors spread the light evenly over the street without waste or glare. Ask for our book "Scientific Street Lighting."

HOLOPHANE GLASS CO., Inc.

Dept. A. C.-6, 342 Madison Ave., New York

Works: Newark, Ohio

In Canada: Holophane Co., Ltd., 146 King St. W.
Toronto.





OIL-BURNING TOOL HEATER AND SURFACE HEATER

At left, tool heater which does away with smoke and dust. At right, surface heater with large daily yardage

oil-burning tool and surface heaters have been returned to active distribution. The accompanying illustrations show the tool and surface heaters which are used in a number of cities and by many contractors. The tool heater is equipped with rubber tires, Timken bearings and steady rests and a new type of burner. The artillery wheels and roller bearings make possible more rapid and noiseless transportation. The new burners are more efficient and are unaffected by the high temperatures generated, and the new steady rests both front and rear prevent tipping. These machines can readily be pushed by one man. The surface heaters have been improved by more efficient burners and lifting apparatus and refined insulation.

The surface heaters are made in two sizes. One covers 2 square yards and works up to street car tracks without interfering with car movements. The other covers 4 square yards. Both machines are mounted on springs to prevent damage in transit and both fold up to facilitate transportation. The cutting edges all around the burner hood give clean, straight joints, and it has been found possible in actual service to melt down old asphalt to 1 inch depth in 4 to 5 minutes. As much as 600 square yards of asphalt has been heated to a 1-inch depth in an 8-hour day. In the city of Detroit, one Chausse surface heater and two men were able to do the work of four men chopping out, and at the same time saved 1 inch of asphalt and $1\frac{1}{8}$ inches of binder in addition. Hand chopping meant taking out everything right down to the base, so that the Chausse machine saves both labor and material. In the completion of approximately 80,000 square yards of asphalt repairing, this heater reduced the cost from \$1.22 to 97 cents per square yard.

The tool heaters or fire wagons will bring fourteen or fifteen cold tools up to a proper temperature in fifteen minutes and provide space for heating three buckets of cement so that two gangs can work on one machine, if necessary. The burners will generate a maxi-

mum temperature in five minutes, so it is no longer necessary to build up coal or wood fires long in advance of the use of the machine. These heaters eliminate smoke, sparks and ashes and are not affected by rain or wind. Sufficient kerosene or distillate is carried for two 8-hour days of continuous burning at maximum temperature. The fact that there is no danger in the use of these machines and no possibility of damage to awnings and no objection from householders makes them much more satisfactory than other apparatus.

The officers of the Chausse Oil Burner Company are: W. McK. White, President; W. G. Chausse, Vice-President; Ray T. White, Secretary. Plans are being made for the location of a factory either in Detroit or in a near-by city very shortly.

Self-Dumping Steel Body for One-Ton Trucks

A new self-dumping steel body unit for one-ton trucks is now being manufactured by the Wood Hydraulic Hoist and Body Company, Detroit, Mich. The body, with its mounting frame, hinges and locking device, is a complete unit ready for placing on the truck frame. There are no holes to drill nor any parts which are attached separately. The mounting of the unit on a Ford truck is very simply accomplished by placing the body in the required position and bolting it securely in place with the bolts furnished with the unit. The hinges on which the bodies tilt are two large pins or fulcrums which displace the center of the loaded body towards the rear while dumping, assuring quick action and obtaining a high dumping angle to discharge the body's contents cleanly. The body is returned to the down and locked position by a handle attached to the front of the body. Only a slight effort is required, as the body when empty is in a balanced condition. The release handle is arranged for convenient operation by the driver and positively locks the body against accidental operation when the truck is in rough going.

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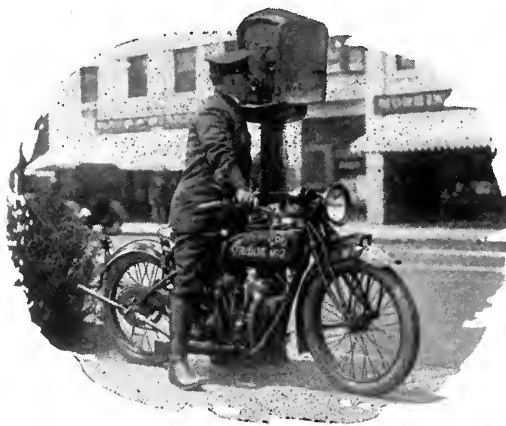
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Why carry excess baggage?



—when a middleweight motorcycle will do the work?

There are times when a municipality's requirements demand motorcycles of speed and excess power, both for solo and side car duty.

Where speed is especially required, we recommend INDIAN Big Chief, with a motor of 74 cu. in. displacement and capable of making 75 to 80 miles or better, ridden solo; and 60 to 65 miles an hour and upwards, with sidecar.

BUT—for patrol and escort duty, and for hundreds of other police requirements, the INDIAN Scout, of 37 cu. in. displacement, is the motorcycle which ideally meets the demands.

The INDIAN Scout is 100 pounds lighter than the average motorcycle. Extremely low on oil and gas consumption, and all other upkeep. Sturdy, powerful and dependable, with maximum speed of 55 to 65 M. P. H.

As proof of the fact that it is ideally adapted for patrol work, the Massachusetts State Police are now using "70" INDIAN Scout Motorcycles exclusively.

Lower initial cost of the INDIAN Scout, and the difference in maintenance, will make a big saving in your police budget.

Investigate the capabilities of the INDIAN Scout before definitely deciding upon a heavier motor.

Write Dept. A-6 for our police booklet,
"Maintaining Law and Order."

HENDEE MANUFACTURING COMPANY
SPRINGFIELD, MASS.

Indian Scout



Save 25% to 75% on catch basin cleaning

THE OTTERSON AUTO EDUCTOR not only cleans catch basins more thoroughly but more economically than is possible through the use of the old-fashioned, unpleasant manual labor method.

This unit operated by two men, consists of a powerful centrifugal pump, hose connections and tank mounted on a 5-ton Mack Truck chassis. The pump and dumping mechanism are driven by the Mack Truck engine.

Send for bulletins describing the Ottersson Auto Eductor and other Mack motorized municipal equipment for fire fighting, garbage removal, road building and maintenance. They should be in your files.

INTERNATIONAL MOTOR COMPANY
25 Broadway New York City

Branches owned by this company operate under the titles of: "MACK MOTOR TRUCK COMPANY" and "MACK-INTERNATIONAL MOTOR TRUCK CORPORATION."



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